

SVI Demo

FWI- 20

Production Specification



ROCK SOLID QUALITY

APPARATUS TRAINING VIDEOS

Manufacturer shall provide basic apparatus training videos accessible on their website. Videos will be of general product knowledge and not necessarily specific to purchaser's apparatus.

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 SVI_Trucks_Demo_1332_fwi_20 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 1900 needed by the manufacturer to build the apparatus, including:

- 1) Requirements not uniquely specified in NFPA 1900, 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 1900.

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,

3. Estimated In-Service Weight,
4. Wheelbase, Turning Clearance Radius,
5. Principal dimensions, Angle of Approach, Angle of Departure,
6. 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 (0°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:

- 7) Accelerating from 0 to 35 mph (55 km/hr) within 25 seconds on a 0 percent grade
- 8) Attaining a speed of 50 mph (80 km/hr) on a 0 percent grade
- 9) 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:

10) 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 10.7.17*)
- 3) Siren manufacturer's certification of the siren (*see 10.8.1.1*)

- 4) Written load analysis and results of the electrical system performance tests (*see 10.13.1 and Section 10.14*)
- 5) Certification of slip resistance of all stepping, standing, and walking surfaces (*see 12.6.4.5*)
- 6) If the apparatus has a fire pump, or a wildland fire pump, the pump manufacturer's certification of suction capability (*see 13.2.4.1 or 15.2.4.1*)
- 7) If the apparatus is equipped with a fire pump or a wildland fire pump and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions (*see 13.2.4.2 or 15.2.4.2*)
- 8) If the apparatus has a fire pump, or a wildland fire pump a copy of the apparatus manufacturer's approval for stationary pumping applications (*see 13.3.1 or 15.3.1*)
- 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 13.3.2.2*)
- 10) If the apparatus has a fire pump or a wildland fire pump, the pump manufacturer's certification of the hydrostatic test (*see 13.5.2.2 or 15.5.2.2*)
- 11) If the apparatus has a fire pump with a maximum discharge pressure capability rating that exceeds the hydrostatic test pressure of 13.5.2.1, the pump manufacturer's certification of the hydrodynamic test
- 12) If the apparatus has a fire pump or a wildland fire pump, the certification of inspection and test for the fire pump (*see 13.13.1.1.5 or 13.13.1.2.4 or 15.13.1.2.4 as applicable*)
- 13) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test (*see Section 14.13*)
- 14) When the apparatus is equipped with a water tank, the certification of water tank capacity (*see Section 17.6*)
- 15) If the apparatus has an aerial device, the certification of inspection and test for the aerial device (*see Section 20.31*)
- 16) If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1910
- 17) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy (*see 18.10.4.2*) and the final installer's certification the foam proportioning system meets this standard (*see 18.11.2*)
- 18) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests (*see Section 19.9*)
- 19) If the apparatus has a line voltage power source, the certification of the test for the power source (*see 21.15.7.2*)
- 20) If the apparatus is equipped with an air system, air tank certificates (*see 23.5.1.2*), the SCBA fill station certification (*see 23.9.6*), and the results of the testing of the air system installation (*see 23.14.5 and 23.15.4*)
- 21) For wildland fire apparatus, or structural apparatus without stability control, certification of vehicle side slope stability, including the weight distribution assumed for the calculations or as loaded on the vehicle for the tilt table test (*see 7.14.3*)
- 22) 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:

- 23) Manufacturer's name and address
- 24) Country of manufacture
- 25) Source for service and technical information
- 26) Parts replacement information
- 27) Descriptions, specifications, and ratings of the chassis, pump (if applicable), and aerial device (if applicable)
- 28) 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
- 29) Lubrication charts
 - 30) Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems
 - 31) Precautions related to multiple configurations of aerial devices, if applicable
 - 32) Instructions regarding the frequency and procedure for recommended maintenance
 - 33) Overall apparatus operating instructions
 - 34) Safety considerations
 - 35) Limitations of use
 - 36) Inspection procedures
 - 37) Recommended service procedures
 - 38) Troubleshooting guide
 - 39) Apparatus body, chassis and other component manufacturer's warranties
 - 40) Special data required by this standard
 - 41) 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.

STATEMENT OF 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:

- 42) A separate specification of the section of the applicable standard for which compliance is lacking
- 43) A description of the particular aspect of the apparatus that is not in compliance therewith or required equipment that is missing
- 44) A description of the further changes or modifications to the delivered apparatus that must be completed to achieve full compliance

- 45) 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:

- 46. The chassis, body and tank(s)
- 47. Full fuel, lubricant, and other chassis or component fluid tanks or reservoirs
- 48. Full water and other agent tanks
- 49. *250 lb (114 kg) in each seating position
- 50. Fixed equipment such as pumps, aerial devices, generators, reels and air systems as installed
- 51. Ground ladders, suction hose, designed hose load in their hose beds and on their reels
- 52. 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)	2,500	1,135

		GVWR		
		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:

- 53) Documentation of the electrical system performance tests
- 54) 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 1900 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:

- 55) The power source output voltage, frequency and amperes
- 56) The prime mover's oil pressure, water temperature and transmission temperature, if applicable
- 57) The power source hydraulic fluid temperature, if applicable
- 58) 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 $\pm 10\%$ 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 21.15.7.3.11.2, 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:

- 4) Isolate the power source from the panel board and disconnect any solid state low voltage components
- 5) Connect one lead of the dielectric tester to all the hot and neutral buses tied together
- 6) Connect the other lead to the fire apparatus frame or body
- 7) Close any switches and circuit breakers in the circuit(s)
- 8) 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 SVI_Trucks_Demo_1332_fwi_20 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 seven hundred fifty (750) days after pre-construction meeting and receipt and approval of any signed change orders from SVI_Trucks_Demo_1332_fwi_20.

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 SVI_Trucks_Demo_1332_fwi_20 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 1900.

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 1900.

Inspection Trips

CAB CHASSIS SPECIFICATION

FREIGHTLINER SPECIFICATION PROPOSAL

Vehicle Configuration

M2 106 PLUS CONVENTIONAL CHASSIS
2026 MODEL YEAR SPECIFIED
SET BACK AXLE - TRUCK

General Service

DOMICILED, USA 50 STATES (INCLUDING CALIFORNIA AND
CARB OPT-IN STATES)
RESCUE AND EMERGENCY SERVICES
MEDIUM TRUCK 2 YEAR WARRANTY
EXPECTED FRONT AXLE LOAD: 12000 lbs
EXPECTED REAR DRIVE AXLE LOAD: 27000 lbs
EXPECTED GROSS VEHICLE CAPACITY: 39000 lbs

Engine

CUM L9 360EV HP @ 2200 RPM, 2200 GOV RPM, 1150 LB-FT
@ 1200 RPM, FIRE/EMERGENCY

Engine Equipment

EPA 2010/GHG 2024 CONFIGURATION
AIR INTAKE WITH NFPA COMPLIANT EMBER SCREEN AND
FIRE-RETARDANT DONALDSON AIR CLEANER
LN 12V 325 AMP BLP4002H BRUSHLESS PAD ALTERNATOR
WITH REMOTE SENSE AND LAMP TERMINAL
(2) DTNA GENUINE, FLOODED STARTING, MIN 2000CCA,
370RC, THREADED STUD BATTERIES WITH POSITIVE JUMP
START POST
BATTERY BOX FRAME MOUNTED
WIRE GROUND RETURN FOR BATTERY CABLES WITH
ADDITIONAL FRAME GROUND RETURN
POSITIVE LOAD DISCONNECT WITH CAB MOUNTED
CONTROL SWITCH MOUNTED OUTBOARD DRIVER SEAT
CUMMINS TURBOCHARGED 18.7 CFM AIR COMPRESSOR
WITH INTERNAL SAFETY VALVE
C-BRAKE BY JACOBS WITH HIGH MED LOW BRAKE WITH
DASH SWITCH

RH MTD HORIZONTAL AFTERTREATMENT WITH RH
MOUNTED BRIGHT VERTICAL CURVED TAILPIPE
AIR POWERED ON/OFF ENGINE FAN CLUTCH
AUTOMATIC FAN CONTROL WITHOUT DASH SWITCH
CUMMINS SPIN ON FUEL FILTER
COMBINATION FULL FLOW/BYPASS OIL FILTER
1100 SQUARE INCH ALUMINUM RADIATOR
ANTIFREEZE TO -34F, OAT (NITRITE AND SILICATE FREE)
EXTENDED LIFE COOLANT
GATES BLUE STRIPE COOLANT HOSES OR EQUIVALENT
CONSTANT TENSION HOSE CLAMPS FOR COOLANT HOSES
ELECTRIC GRID AIR INTAKE WARMER
DELCO 12V 38MT HD STARTER WITH INTEGRATED
MAGNETIC SWITCH

Transmission

ALLISON 3000 EVS 6 SPD AUTOMATIC TRANSMISSION
WITH PTO PROVISION

Transmission Equipment

MAGNETIC PLUGS, ENGINE DRAIN, TRANSMISSION DRAIN,
AXLE(S) FILL AND DRAIN
HEAVY DUTY ELECTRONIC TRANSMISSION SHIFT
CONTROL, COLUMN MOUNTED
TRANSMISSION PROGNOSTICS - ENABLED 2013
WATER TO OIL TRANSMISSION COOLER
TRANSMISSION OIL CHECK AND FILL WITH ELECTRONIC
OIL LEVEL CHECK
SYNTHETIC TRANSMISSION FLUID (TES-295 COMPLIANT)

Front Axle and Equipment

DETROIT DA-F-12.0-3 12,000# FF1 71.5 KPI/3.74 DROP
SINGLE FRONT AXLE
MERITOR 16.5X5 Q+ CAST SPIDER CAM FRONT BRAKES,
DOUBLE ANCHOR, FABRICATED SHOES
FIRE AND EMERGENCY SEVERE SERVICE, NON-ASBESTOS
FRONT LINING
FRONT OIL SEALS
HALDEX AUTOMATIC FRONT SLACK ADJUSTERS
TRW THP-60 POWER STEERING
SYNTHETIC 75W-90 FRONT AXLE LUBE

Front Suspension

12,000# DUAL TAPERLEAF FRONT SUSPENSION
MAINTENANCE FREE RUBBER BUSHINGS
FRONT SHOCK ABSORBERS

Rear Axle and Equipment

MERITOR 27,000# R-SERIES FIRE/EMERGENCY SERVICE
SINGLE REAR AXLE
IRON REAR AXLE CARRIER WITH STANDARD AXLE
HOUSING

MXL 17T MERITOR EXTENDED LUBE MAIN DRIVELINE WITH
HALF ROUND YOKES
MERITOR 16.5X7 P CAST SPIDER CAM REAR BRAKES,
DOUBLE ANCHOR, CAST SHOES
FIRE AND EMERGENCY SEVERE SERVICE NON-ASBESTOS
REAR BRAKE LINING
REAR OIL SEALS
HALDEX AUTOMATIC REAR SLACK ADJUSTERS
SYNTHETIC 75W-90 REAR AXLE LUBE

Rear Suspension

27,000# FLAT LEAF SPRING REAR SUSPENSION WITH
HELPER AND RADIUS ROD FOR FIRE/EMERGENCY
SERVICE
FORE/AFT CONTROL RODS

Brake System

AIR BRAKE PACKAGE
WABCO 4S/4M ABS WITH TRACTION CONTROL AND ESC
STANDARD AIR SYSTEM PRESSURE PROTECTION SYSTEM
BW AD-9 BRAKE LINE AIR DRYER WITH HEATER
CUSTOM STEEL AIR BRAKE RESERVOIRS
BW DV-2 AUTO DRAIN VALVE - WET TANK

Wheelbase & Frame

(205 INCH) WHEELBASE / (139 INCH) CA
11/32X3-1/2X10-15/16 INCH STEEL FRAME 120KSI
(77 INCH) REAR FRAME OVERHANG

Chassis Equipment

THREE-PIECE 14 INCH CHROME STEEL BUMPER WITH
COLLAPSIBLE ENDS AND CUTOUTS FOR SPEAKERS
FRONT TOW HOOKS - FRAME MOUNTED
FENDER AND FRONT OF HOOD MTD FRONT MUDFLAPS
GRADE 8 THREADED HEX HEADED FRAME FASTENERS

Fuel Tanks

50 GALLON RECTANGULAR ALUMINUM FUEL TANK - LH
6 GALLON DIESEL EXHAUST FLUID TANK
FUEL/WATER SEPARATOR WITH WATER IN FUEL SENSOR

Tires

MICHELIN XZE2 11R22.5 14 PLY RADIAL FRONT TIRES
MICHELIN XDN2 12R22.5 16 PLY RADIAL REAR TIRES

Hubs

CONMET PRESET PLUS PREMIUM IRON FRONT HUBS
CONMET PRESET PLUS PREMIUM IRON REAR HUBS

Wheels

22.5X8.25 10-HUB PILOT POLISHED ALUMINUM DISC FRONT
WHEELS

22.5X8.25 10-HUB PILOT POLISHED ALUMINUM DISC REAR
WHEELS

Cab Exterior

106 INCH BBC FLAT ROOF ALUMINUM CONVENTIONAL AIR
RIDE CAB WITH AERO BRIGHT SUN VISOR
NFPA COMPLIANT LH AND RH EXTERIOR GRAB HANDLES
HOOD MOUNTED CHROMED PLASTIC GRILLES
FIBERGLASS HOOD WITH FIREWALL INSULATION
DUAL 25 INCH ROUND STUTTER TONE HOOD MOUNTED
AIR HORNS WITH DUAL LANYARDS
DUAL ELECTRIC HORNS
LED HEADLIGHT ASSEMBLY AND INCANDESCENT
MARKER/TURN LAMP WITH CHROME BEZELS & DAYTIME
RUNNING LIGHTS
WIG-WAG FLASHING HEADLAMP SYSTEM WITH BODY
BUILDER CONTROLLED ENGAGEMENT
LED AERODYNAMIC MARKER LIGHTS
STANDARD FRONT TURN SIGNAL LAMPS
DUAL 102" WEST COAST BRIGHT FINISH HEATED MIRRORS
WITH LH AND RH REMOTE
LH AND RH 8 INCH BRIGHT FINISH CONVEX MIRRORS
MOUNTED UNDER PRIMARY MIRRORS
REAR WINDOW DELETE
TINTED DOOR GLASS LH AND RH WITH TINTED NON-
OPERATING WING WINDOWS
RH & LH ELECTRIC POWERED WINDOWS & DOOR LOCKS
1-PIECE SOLAR GREEN GLASS WINDSHIELD
2 GALLON WINDSHIELD WASHER RESERVOIR WITH FLUID
LEVEL INDICATOR, FRAME MOUNTED

Cab Interior

GRAY & CARBON VINYL INTERIOR
MOLDED PLASTIC DOOR PANELS WITH ALUMINUM
KICKPANELS LOWER DOORS
BLACK MATS WITH PREMIUM INSULATION
FORWARD ROOF MOUNTED CONSOLE
AM/FM/WB WORLD TUNER RADIO WITH BLUETOOTH, USB
AND AUXILIARY INPUTS
(2) CUP HOLDERS LH AND RH DASH
M2 DASH WITH DUAL USB CHARGING PORTS (2) IN DASH
HEATER, DEFROSTER AND AIR CONDITIONER
MAIN HVAC CONTROLS WITH RECIRCULATION SWITCH
SOLID-STATE CIRCUIT PROTECTION AND FUSES
12V NEGATIVE GROUND ELECTRICAL SYSTEM
LED PREMIUM CAB LIGHTING
SEATS INC 911 UNIVERSAL SERIES HIGH BACK AIR
SUSPENSION DRIVER SEAT NFPA COMPLIANT
SEATS INC 911 UNIVERSAL SERIES HIGH BACK AIR
SUSPENSION PASSENGER SEAT NFPA COMPLIANT
BLACK VINYL SEAT COVERS

NFPA 1901-2009 HIGH VISIBILITY ORANGE SEAT BELTS
ADJUSTABLE TILT AND TELESCOPING STEERING COLUMN
4-SPOKE 18 INCH BLACK STEERING WHEEL
DRIVER AND PASSENGER INTERIOR SUN VISORS

Instruments & Controls

BRIGHT ARGENT FINISH GAUGE BEZELS
LOW AIR PRESSURE INDICATOR LIGHT AND AUDIBLE ALARM
DUAL NEEDLE PRIMARY AND SECONDARY AIR PRESSURE GAUGE
ELECTRONIC AIR RESTRICTION INDICATOR DISPLAYED IN DRIVER DISPLAY
87 DECIBELS TO 112 DECIBELS AUTOMATIC SELF-ADJUSTING BACKUP ALARM
ELECTRONIC CRUISE CONTROL WITH CONTROLS ON STEERING WHEEL SPOKES
PREMIUM INSTRUMENT CLUSTER WITH 5.0 INCH TFT COLOR DISPLAY
FIRE AND EMERGENCY SERVICE VEHICLES ENGINE WARNING
2 INCH ELECTRIC FUEL GAUGE
ELECTRICAL ENGINE COOLANT TEMPERATURE GAUGE
DIGITAL TRANSMISSION OIL TEMPERATURE IN DRIVER DISPLAY
ENGINE AND TRIP HOUR METERS INTEGRAL WITHIN DRIVER DISPLAY
ELECTRIC ENGINE OIL PRESSURE GAUGE
ELECTRONIC MPH SPEEDOMETER WITH SECONDARY KPH SCALE
ELECTRONIC 3000 RPM TACHOMETER
IGNITION SWITCH CONTROLLED ENGINE STOP
DIGITAL VOLTAGE DISPLAY INTEGRAL WITH DRIVER DISPLAY
SINGLE ELECTRIC WINDSHIELD WIPER MOTOR WITH DELAY
ROTARY HEADLAMP SWITCH, MARKER LIGHTS/HEADLIGHTS SWITCH
ONE VALVE PARKING BRAKE SYSTEM WITH DASH VALVE CONTROL
SELF CANCELING TURN SIGNAL SWITCH WITH DIMMER, HEADLAMP FLASH, WASH/WIPE/INTERMITTENT
INTEGRAL ELECTRONIC TURN SIGNAL FLASHER

Paint Design

ONE SOLID CUSTOM BASE/CLEAR COAT CAB PAINT
BLACK, HIGH SOLIDS POLYURETHANE FRAME/CHASSIS PAINT

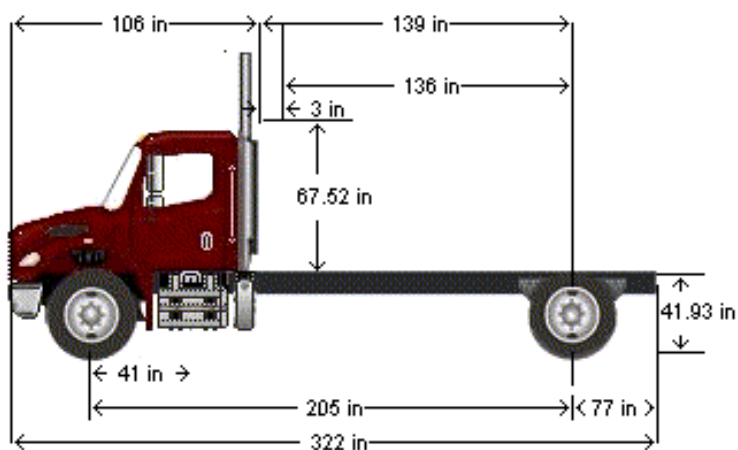
Weight Summary

	Weight Front	Weight Rear	Total Weight
Factory Weight ⁺	7089 lbs	4249 lbs	11338 lbs

(+) Weights shown are estimates only. If weight is critical, contact Customer Application Engineering.

(*) All cost increases for major components (Engines, Transmissions, Axles, Front and Rear Tires) and government mandated requirements, tariffs, and raw material surcharges will be passed through and added to factory invoices.**

DIMENSIONS



ALIGNMENT

SVI shall align the truck prior to delivery. The truck shall be loaded to its equipment allowance based on Gross Vehicle Weight Rating (GVWR) to ensure alignment accuracy.

Apparatus Type	Equip. Storage Area	Apparatus Size	Equipment Allowance	
			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)	4,000	1,800

		GVWR		
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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.

SAE Labels

All labels shall use SAE units, including inches (in) and feet (ft) for dimensions, pounds (lbs) for weight, gallons (gal) for volume, and pounds per square inch (psi) for pressure.

All labels shall use dual units, with dimensions including both inches (in) and meters (m), weight in both pounds (lbs) and kilograms (kg), volume in both gallons (gal) and liters (L), and pressure in both pounds per square inch (psi) and kilopascals (kPa).

FRONT BUMPER

The front bumper shall be as provided by the cab/chassis manufacturer.

BUMPER GRAVELSHIELD

The bumper extension gravel shield if specified shall be provided by the cab/chassis manufacturer.

AIR HORN(S)

Air horn(s) if specified shall be supplied and installed by the cab/chassis manufacturer.

FRONT TOW PROVISIONS

The front tow provisions if specified shall be supplied and installed by the cab/chassis manufacturer.

BUMPER GROUND LIGHTS

SIREN SPEAKER

Two (2) Federal Signal model ES100, 100 watt siren speakers shall be provided with model ESFMT polished trim ring recess mounted, one (1) on the streetside and one (1) on the curbside of the front bumper.

SPEAKER GRILLE

The specified speaker(s) shall have a Federal "F" style grille over speaker with polished stainless steel finish.

AIR INTAKE SYSTEM

An air filter shall be provided in the engine's air intake system by the commercial cab/chassis manufacturer. Air inlet restrictions shall not exceed the engine manufacturer's recommendations.

The air inlet shall be equipped with a means of separating water and burning embers from the air intake system.

This requirement shall be permitted to be achieved by either of the following methods:

9. 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.
10. 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 existing exhaust tailpipe shall be extended to ahead of the rear axle on the curbside.

The exhaust piping and discharge outlet shall be located or shielded so as not to expose any portion of the apparatus or equipment to excessive heating.

Exhaust pipe discharge shall be directed away from any operator's position.

Where parts of the exhaust system are exposed so that they are likely to cause injury to operating personnel, protective guards shall be provided.

- The tail pipe(s) shall terminate in a standard straight cut pipe.
- The tail pipe(s) shall terminate parallel to rear axle and flush with body.
- The tail pipe(s) shall terminate in a standard straight cut pipe.

WARNING LIGHT: CHASSIS CAB

CAB WARNING LIGHT PACKAGE

ZONE A - FRONT WARNING LIGHTS, UPPER

There shall be one (1) Federal Signal 60" Navigator with two (2) SLR Red with "W" mirrors on ends, one (1) SLR Red/White with parabolic mirror in center, and two (2) QL64 Red forward facing lights all with clear domes, black bulkheads, flat mount

All clear lights shall shut down when the parking brake is set to comply with "Blocking" mode requirements as outlined in NFPA 1900.

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

ZONE A - FRONT WARNING LIGHTS, LOWER

There shall be two (2) Federal Signal FR6 LED Light(s) provided, one (1) each side. The light head shall include thirteen (13) programmable flash patterns, four (4) flash modes and Hi/Lo intensities.

Each Light shall have:

- Red LEDs
- Clear Lens

Lights shall be mounted on the lower portion of the chassis grille.

Each light shall have a chrome flange.

- Flash Pattern shall be Federal Signal DoubleFlash 150
- Flash Pattern shall be Federal Signal All Flash (Default Single Color)
- The above Lights shall not be synchronized.

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

There shall be two (2) Federal Signal Micropulse 12 LED Light(s) provided, one (1) each side.

Each Light shall have:

- Red LEDs
- Clear Lens

Lights shall be mounted between the top of the bumper and the bottom of the chassis hood and brackets and will be located as near to the end of the bumper wing as possible.

Each light shall have a chrome flange.

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

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

There shall be two (2) Federal Signal FR6 LED Light(s) provided, one (1) each side. The light head shall include thirteen (13) programmable flash patterns, four (4) flash modes and Hi/Lo intensities.

Each Light shall have:

- Red LEDs
- Clear Lens

Lights shall be mounted on the side of the chassis hood, as far forward as possible and level with the chassis frame rails.

Each light shall have a chrome flange.

- Flash Pattern shall be Federal Signal DoubleFlash 150
- Flash Pattern shall be Federal Signal All Flash (Default Single Color)
- The above Lights shall not be synchronized.

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

CHASSIS HEADLIGHT WIG/WAG

A chassis headlight wig/wag flashing unit shall be provided. The headlight flasher shall shut down when the parking brake is engaged for "Blocking Mode".

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

CAB STEP LIGHTS

Two (2) (one each side) OnScene 10" Access Pro white LED light(s) installed on the vehicle capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

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.

CAB HAZARD WARNING LIGHT

A hazard warning light is not required by NFPA 1900, but will be provided for vehicle and personnel safety. 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.
- 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 déplacer l'engin lorsque la lumière est allumée.*"

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

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 SVI_Trucks_Demo_1332_fwi_20 shall provide the whip.

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

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 SVI_Trucks_Demo_1332_fwi_20 shall provide the whip.

CELLULAR PHONE ANTENNA INSTALLATION

There shall be one (1) cellular phone antenna mount provided and installed on the cab roof. The end of cellular antenna shall be routed to a location determined by the SVI_Trucks_Demo_1332_fwi_20.

Due to multiple configurations of antenna whips, the Manufacturer shall provide the antenna base, and SVI_Trucks_Demo_1332_fwi_20 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.

SCBA SEAT AIR PACK BRACKETS

No SCBA air pack bracket(s) shall be provided in specified commercial cab SCBA seats. SVI_Trucks_Demo_1332_fwi_20 will provide and install necessary bracket(s) after delivery.

SEAT BELT COLOR

Section 11.1.3.3 of the NFPA 1900 Standards, requires all seat belt webbing in cab to be bright red or bright orange in color, and section 11.1.3.4 the buckle portion of the seat belt shall be mounted on a rigid or semi rigid stalk such that the buckle remains positioned in an accessible location.

SEAT BELT WEB LENGTH - COMMERCIAL CAB

Sections 11.1.3.1 and 11.1.3.2 of the NFPA 1900 standards, require the effective seat belt web length for a Type 1 lap belt for pelvic restraint to be a minimum of 60", and a Type 2 pelvic and upper torso restraint-style seat belt assembly to be a minimum of 110".

The chassis seat belt web length as supplied by the commercial chassis manufacturer shall be compliant to NFPA Standards 11.1.3.1 and 11.1.3.2.

SEAT BELT MONITORING AND VEHICLE DATA RECORDER (VDR) SYSTEMS

SEAT BELT MONITORING

A Weldon 6204 series Occupant Restraint Indicator (ORI) display shall be provided and installed to allow the driver to know if all persons seated in the vehicle are secured with seat belts before moving the vehicle. Built-in smart seating logic shall detect if the correct sit and buckle sequence is not followed for all seats. System shall also provide an output for an external alarm. Weldon diagnostic port will be located under dash on driver side. System shall include the following features;

VEHICLE DATA RECORDER (VDR)

The vehicle data recorder shall have the following features;

- Recorded Data Includes: Vehicle Speed, Acceleration, Deceleration, Engine Speed, Engine Throttle Position, ABS Event, Seat Occupied Status, Seat Belt Status, Master Optical Warning Switch, Park Brake, Service Brake, Time, Date and Engine Hours.
- Password Protected by the customer
- Six (6) seat position inputs for occupied and belts buckled. Additional six (6) seat expansion module available.

- Easily interfaces with traditional wiring, or optional V-MUX™ or other multiplexing systems
- Data is extracted by a standard, mini USB cable
- Use in conjunction with the Occupant Restraint Indicator or optional V-MUX™ multiplex system

OCCUPANT RESTRAINT INDICATOR

The occupant restraint indicator shall have the following features;

- Supports commercial and custom cab seating layouts; up to 12 seats
- Built-in audible alarm
- Use in conjunction with Vehicle Data Recorder (VDR)

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 SVI_Trucks_Demo_1332_fwi_20 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 SVI_Trucks_Demo_1332_fwi_20 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 CRASH TEST CERTIFICATION

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

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

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

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

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 door shall have 4" Chevron style 3M Scotchlite 680 series graphic film.

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

CAB INTERIOR COMPONENT PAINT COLOR, OEM SUPPLIED

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

CAB STEP OVERLAY

One (1) of the cab/chassis supplied entry steps will be overlaid with 1/8" NFPA compliant aluminum treadplate non-skid stepping surface.

The maximum stepping height shall not exceed 18", with the exception of the ground to first step, which shall not exceed 24" when the vehicle is loaded to its estimated in-service weight. All steps shall have a minimum area of 35 sq in. and shall be of such a shape that a 5" diameter disk does not overlap any side when placed on the step, and shall be arranged to provide at least 8" of clearance between the leading edge of the step and any obstruction. All platforms shall have a minimum depth of 8" from the leading edge of the platform to any obstruction.

There shall be grip strut inserts recessed into steps.

CAB STEP LIGHTS

Two (2) (one each side) OnScene 10" Access Pro white LED light(s) installed on the vehicle capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

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.

HUB AND NUT COVERS

Front and rear wheels shall be provided with stainless steel hub caps and wheel nut covers.

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.

AIR BRAKE SYSTEM QUICK BUILD-UP - STYLE 'M' / INDUSTRIAL INLET CONNECTION

There shall be one (1) male, quick connect type inlet to provide air to the chassis air tanks from a station/external compressed air shoreline in order to maintain full operating air pressure while the vehicle is not running. The system shall include a one-way check valve to prevent accidental release of chassis air pressure and be labeled "AIR INLET".

- Air inlet shall be located near driver's door.
- The fitting will be of style 'M' / Industrial design.

The inlet shall eliminate the need for a quick build up system and the 60 second buildup time.

The female end of the connector shall be supplied by the SVI_Trucks_Demo_1332_fwi_20.

CHASSIS AIR TANK DRAINS

The cab/chassis air brake system tank drains shall remain as provided by cab/ chassis manufacturer.

ROAD EMERGENCY SAFETY KIT

The completed unit shall be supplied with one (1) set of three (3) dual faced reflective triangles, and three (3) warning flares complete with storage case per DOT requirements.

One (1) 2.5 lb. ABC type vehicle fire extinguisher with bracket per DOT requirements shall be provided and mounted inside cab area.

Front Cab Components: Not Provided

DEF FLUID FILL

The DEF fluid fill shall be as supplied by commercial cab/chassis manufacturer.

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 SVI_Trucks_Demo_1332_fwi_20 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 SVI_Trucks_Demo_1332_fwi_20 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.

CAB TO AXLE DIMENSION

Cab to axle will be 136.5".

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.

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 6" x 1/4" aluminum tubes, the same width as the chassis frame rails, NO EXCEPTION. Welded to this tubing shall be cross members of 2" x 6" x 1/4" aluminum. 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 six (6) spring loaded body mounts. Each mount shall be configured using a two-piece encapsulated slide bracket. The two (2) brackets shall be fabricated of heavy duty 1/4" thick steel and shall have a powder coat finish to resist any corrosion. Each mounting assembly shall utilize two (2) 3/4" diameter x 6" long grade 8 bolts and two (2) heavy duty springs. The assembly design shall allow the body and subframe to act as one (1) component, separate from the chassis. As the chassis frame twists under driving conditions, the spring mounting system shall eliminate any stress from being transferred into the body. The spring loaded body mounts shall also prevent frame side rail or body damage caused by unevenly distributed stress and strains due to load and chassis movement.

Body mountings that do not allow relief from chassis movement will not be acceptable.

12" 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 12" and provide a rear step with a minimum of 1/2" space at body for water drainage.

Rear bumper shall be provided with one (1) 4.75" aluminum Grip-Strut insert(s) for improved slip resistance.

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.

GROUND LIGHTS

There shall be two (2) OnScene 10" Access Pro white LED lights installed below bumper capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

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

WHEEL WELL EXTERIOR PANEL

The exterior panel of the body wheel 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.

SCBA CYLINDER COMPARTMENTS

Two (2) SCBA cylinder storage compartments shall be provided on curbside of the body in rear wheel well area. Each compartment shall have a stainless steel hinge with brushed stainless steel door assembly with a positive catch latch. Each compartment shall have a 8" diameter tube behind the wheel well panel attached to the door assembly. Each compartment shall allow the storage of an SCBA cylinder or a fire extinguisher up to 7-3/4" in diameter x 22" deep. The door shall activate the "Hazard Warning Light" in the cab when not in the closed position.

FENDER BACK-UP LIGHTS

Two (2) TecNiq model E61-WS00-1 surface mount, 14,000 lumen LED back-up lights with stainless steel housing shall be provided in rear fender panels facing the rear of vehicle. Lights shall be wired into the back-up light circuit.

ACCESS LADDER

The top of the body shall be accessible from the ground by a folding style ladder. The ladder design shall have a main pivoting ladder section with a fixed bolt-on upper hand rail section that extends just above top surface. The lower step section of ladder shall fold-out creating an angled ladder that brings the first step closer to ground for easier step height access and a comfortable climbing angle. The ladder shall fold-up and store in vertical position for better angle of departure.

Each cast aluminum step shall be 4-1/2" deep x 16" wide. Hand railing shall be 2-1/8" oval shaped aluminum tubing with a ribbed gripping surface.

The ladder shall be wired to the door ajar warning light in cab to warn the driver that the ladder is in the down position. Ladder shall be mounted to body with stainless steel bolts.

Ladder shall be located on rear curbside of the body.

WALKWAY/STEP LIGHTS

There shall be two (2) OnScene Solutions Rough-Service 9" LED lights provided to illuminate the walkway or step area.

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

Lighting shall provide illumination at a minimum level of 2 fc (20 lx) on all work surfaces, steps, and walkways. Lighting shall be switchable but activated automatically when the vehicle park brake is set.

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;

13) Clean bare metal with a wax and grease remover using low lint rags.

- 14) 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.
- 15) Re-clean bare metal using a wax and grease remover and low lint rags.
- 16) 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.
- 17) Inspect, putty fill, and dry guild coat entire body surface and DA sand using 180-400 grit dry paper.
- 18) Re-clean bare metal using a wax and grease remover using low lint rags.
- 19) 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.
- 20) 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.
- 21) 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.).
- 22) 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.
- 23) 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 SVI_Trucks_Demo_1332_fwi_20 approved paint spray out provided.

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

BODY UNDERCOATING

The entire underside of body shall be sprayed with black automotive undercoating. Undercoating shall cover all areas underside of body and wheel well area to help 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

A color graphics proof of the reflective striping layout shall be provided for approval by SVI_Trucks_Demo_1332_fwi_20 prior to installation. The graphics proof shall be submitted to SVI_Trucks_Demo_1332_fwi_20 on 8.5" x 11" sheets with front, sides, rear and plan views, each on one (1) sheet. In addition if there is any special art work an additional sheet shall be provided showing all details. **Note:** The graphics color proof may not reflect the correct paint break lines on the chassis and body please refer to the paint section of your specifications for correct paint break lines.

REFLECTIVE STRIPE - CAB SIDE

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

- This reflective stripe shall be white in color.

There shall be a 2" Scotchlite reflective stripe located 1" above and a second 2" Scotchlite reflective stripe located 1" below the main stripe.

- This reflective stripe shall be gold in color.

REFLECTIVE STRIPE - CAB FRONT

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

- This reflective stripe shall be white in color.

There shall be a 2" Scotchlite reflective stripe located 1" above and a second 2" Scotchlite reflective stripe located 1" below the main stripe.

- This reflective stripe shall be gold in color.

REFLECTIVE STRIPE - BODY SIDES

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

- This reflective stripe shall be white in color.

There shall be a 2" Scotchlite reflective stripe located 1" above and a second 2" Scotchlite reflective stripe located 1" below the main stripe.

- This reflective stripe shall be gold in color.

The stripe shall remain in a straight line from the front of the front of cab to the rear body.

CHEVRON REFLECTIVE STRIPE - REAR SIDES PANELS

At least 50 percent of the rear-facing vertical surfaces, visible from the rear of the apparatus, excluding any pump panel areas not covered by a door, shall be equipped with retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees. Each stripe shall be 6" width.

The rear side panels of the body on each side of a rear stairway or compartment shall have a chevron style reflective stripe, extending from bumper to full body height. Each chevron panel shall be a full sheet and shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use.

The stripe material shall be 3M Diamond Grade.

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

CAB STRIPE - 22K GOLD LEAF

The cab shall have a 1/2" wide 22K gold leaf stripe provided on each side of cab on the two-tone cab paint line. Stripe shall have a black outline.

LETTERING

GRAPHICS PROOF

A color graphics proof of the lettering layout shall be provided for approval by SVI_Trucks_Demo_1332_fwi_20 prior to installation. The graphics proof shall be submitted to SVI_Trucks_Demo_1332_fwi_20 on 8.5" x 11" sheets with front, sides, rear and plan views, each on one (1) sheet. In addition if there is any special art work an additional sheet shall be provided showing all details.

The following lettering shall be provided and installed on the completed unit as follows;

SIDE CAB DOOR LETTERING

UPPER BODY SIDE LETTERING

There shall be twenty four (24) 8" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

Provide details.

REAR BODY LETTERING

There shall be twelve (12) 4" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

Provide details.

Specified lettering shall be provided with a black outline.

FRONT OF BODY LETTERING

There shall be twelve (12) 6" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

Provide details.

SUPPLIED DECALS

The bidder shall install two (2) SVI_Trucks_Demo_1332_fwi_20 supplied decal(s) on the vehicle, located on the.

SVI Manufacturer Badge:

The truck shall be provided with the SVI Winged Logo including all badges, QR Codes, and Mudflaps.

EXTERIOR COMPARTMENT DOORS

FLUSH FITTING HINGED DOOR CONSTRUCTION

The exterior compartment doors shall be a flush style, custom manufactured and built for each compartment. The compartment doors must be able to withstand years of rugged service and wear. For this reason, the compartment door design, metal thickness, and attachments must be strictly adhered to.

The compartment doors shall be all aluminum 3003H-14 alloy construction. The exterior panel shall be of 1/8" thickness smooth plate aluminum and the interior panel shall be of 1/8" thickness smooth plate aluminum. Lighter gauge material will NOT BE ACCEPTABLE in these areas. The double panel doors shall be 1-3/4" thick to completely enclose the door latching assembly. Doors shall have drain hole openings for drainage and ventilation.

The doors shall be flush mounted so that the outer surface is in line with the side body surface. Lap or bevel type constructed doors, doors framed with extrusions, or doors requiring rubber bumpers to prevent unnecessary contact are NOT ACCEPTABLE.

Compartment door openings shall be sealed with closed cell automotive type rubber molding to provide a weather resistant seal around door. Open cell foam type rubber moldings are NOT ACCEPTABLE.

Hinged compartment doors shall have 14 gauge stainless steel hinge, with 1/4" stainless steel pin. The hinge shall be bolted to the door and body with stainless steel machine screws. A polyester barrier film gasket shall be placed between stainless steel hinge and any dissimilar metals as necessary.

Each door shall be capable of being opened or closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door. Door checks that require unlatching by hand will NOT BE ACCEPTABLE.

Vertically hinged door openings up to 32" wide shall be single door construction. Door openings over 32" shall be double door construction with the forward first opening door overlapping the second opening door.

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. Slat 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

	<u>Description</u>	<u>Dimension</u>
A	Bottom of Subframe to Top of Body	88.7"
B	Bottom of Subframe to Bottom of Body	22.5"
C	Total Body Height	111.2"
D	Compartment Height Above Frame	48.0"
E	Compartment Height Below Frame	25.0"
F	Vertical Door Opening - (Full Height Compartment):	
	-with roll-up door	65.0"
	-with hinged door	68.5"
G	Vertical Door Opening (Below Frame Compartment):	
	-with hinged door	19.0"

ABOVE REAR AXLE

	<u>Description</u>	<u>Dimension</u>
H	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	34.0"
	-with hinged door	37.5"

BEHIND REAR AXLE

	<u>Description</u>	<u>Dimension</u>
I	Bottom of Subframe to Bottom of Body	20.0"
J	Compartment Height Above Frame	48.0"
K	Compartment Height Below Frame	22.5"
L	Vertical Door Opening - (Full Height Compartment):	
	-with roll-up door	62.0"
	-with hinged door	65.5"
M	Vertical Door Opening - (Below Frame Compartment):	

N	-with hinged door	16.5"
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GENERAL

	<u>Description</u>	<u>Dimension</u>
O	Bottom of Drip Rail to Top of Body	38.5"
P	Walk-in Interior Height	78.0" (min.)

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

BODY WIDTH DIMENSIONS

The body shall be 100.0" wide, and 102.0" wide at drip rails. Interior compartment depth dimensions shall be approximately:

<u>Area</u>	<u>Description</u>	<u>Dimension</u>
	Transverse above subframe	95.0"
	Compartment depth below subframe	24.5"

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 floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 250 lbs. Slide-out tray(s) base shall be approximately 24" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position.
- Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray with an internal depth of approximately 3 1/2".
 - The above component(s) shall have a smooth un-painted finish.
 - Any equipment mounting on slide tray shall be provided by SVI_Trucks_Demo_1332_fwi_20 after delivery.

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 SEOW 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 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 duplex straight-blade receptacle
 - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
 - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
 - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
- One (1) Akron Brass model EJB-VMT aluminum treadplate vertical mounting bracket for specified power distribution box shall be provided and mounted in compartment per SVI_Trucks_Demo_1332_fwi_20.
- The fairlead roller shall be mounted directly to the reel.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.
- Location for specified battery conditione.

STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S2)

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.
- A keyed 1250 cylinder lock shall be provided on bottom rail of the roll-up door.
- The roll-up doors shall be manually operated with a key.
- 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 floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- One (1) Norcold 3.3 cu.ft., model DE105 refrigerator/freezer shall be provided and installed. The unit shall be a flush mount style recessed into an enclosure. The refrigerator shall operate from both 12 VDC and 120 VAC power. The built-in dimensions are 30-7/8" high x 23-1/4" wide x 23-1/2" deep.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.
- There shall be one (1) 120 VAC outlet(s) located in compartment.
 - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
 - Outlet(s) shall be powered 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.

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S3)

The interior useable compartment width shall be approximately 64.5" wide.

- This compartment shall have a R•O•M series IV roll-up door.
- The compartment door opening shall be approximately 57.5" 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.
- A keyed 1250 cylinder lock shall be provided on bottom rail of the roll-up door.
- The roll-up doors shall be manually operated with a key.
- 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 floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- 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.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

STREETSIDE COMPARTMENT - REAR (S4)

The interior useable compartment space shall be approximately 70.5" wide.

- This compartment shall have a R•O•M series IV roll-up door.
- The compartment door opening shall be approximately 63.5" 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.
- A keyed 1250 cylinder lock shall be provided on bottom rail of the roll-up door.
- The roll-up doors shall be manually operated with a key.
- 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 floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) adjustable shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.
 - Any equipment mounting on adjustable shelf shall be provided by SVI_Trucks_Demo_1332_fwi_20 after delivery.
 - The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) OnScene Solutions 84 series slide-out, drop-down style aluminum tray base with 90% extension, and rating of 150 lbs. Slide-out tray(s) base shall be approximately **24" deep** and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be

vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position.

- Each tray shall be fabricated from 3/16" 3003 aluminum sheet and 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 SVI_Trucks_Demo_1332_fwi_20 after delivery.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

CURBSIDE COMPARTMENT - FRONT (C1)

The interior useable compartment width shall be approximately 64.5" wide.

- This compartment shall have a flush fitting horizontally hinged, drop-down style compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 58.5" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring non-locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.
- The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior to activate compartment lighting and door ajar signal in cab when door is opened.
- One (1) 6" x 7-1/16" large air vent shall be provided in lower compartment wall for air displacement.

COMPARTMENT LAYOUT

- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- There shall be 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.
- One (1) OnScene Access PRO white LED mounted at the top of the compartment toward the door opening.

CURBSIDE COMPARTMENT - AHEAD OF REAR WHEEL (C2)

SIDE ENTRY DOOR

Access shall be provided to the interior through a single side entry door with a clear door opening width of approximately 28.5".

Construction of the side entry door shall be with 1/8" aluminum exterior smooth plate and painted exterior body color choice. The interior door pan shall be constructed from 1/8" aluminum treadplate.

The door shall be hung on full height 14 gauge stainless steel hinge, with a 1/4" stainless steel pin. The hinge shall be bolted to the door and body with stainless steel machine screws at offset 5" centers. A polyester barrier film gasket shall be placed between the stainless steel hinge and door.

Full width padded foam cushion head bumper shall be provided above door opening. The head bumper shall be covered with matching interior vinyl and bolted to interior of door way.

The door latch mechanism shall include a stainless steel paddle type handle on interior. A polyester barrier film gasket shall be placed between the stainless steel handles and the aluminum door panels. The door latch shall be a double catch two-point safety slam latch recessed inside the double panel door with strike plate mounted top and bottom of door frame complying with FMVSS requirements.

- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

WINDOW(S)

There shall be one (1) 18" wide x 22" high, double-paned insulated, non-sliding window(s) installed in the entrance door. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

WINDOW(S)

There shall be one (1) 18" wide x 22" high, double-paned insulated, vertical sliding window(s) installed in the entrance door. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

- One (1) OnScene 10" Access Pro 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.

ENTRY HANDRAILS

There shall be two (2) handrails provided at entry door; one (1) 24" vertical on exterior of body on door handle side, and one (1) 30" on inside of door. The interior handrail shall be angled for optimum use when entering or exiting the interior body area.

Handrails shall be NFPA compliant 1-1/4" knurled 304 stainless steel with welded end stanchions.

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.

ELECTRIC STEP

There shall be one (1) Kwikkee 39 Series 12 VDC, electric step(s) that automatically extends when you open entry door(s) and retracts when you close entry door(s). The power step will automatically stop if it strikes an obstacle. The Kwikkee electric step components uses weatherproof wiring and connectors to prevent shorts and corrosion in the system.

The distance from the ground to the first step shall be no more than 24" per in accordance with NFPA 1900 guideline. The top surface of each step shall be covered with an NFPA 1900 nonskid compliant aluminum tread plate.

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. sq. (62,000 mm²) of retroreflective material affixed to the inside of the door.

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

- This reflective stripe shall be white in color.

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C3)

The interior useable compartment width shall be approximately 64.5" wide.

- This compartment shall have a R•O•M series IV roll-up door.
- The compartment door opening shall be approximately 57.5" 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.
- A keyed 1250 cylinder lock shall be provided on bottom rail of the roll-up door.
- The roll-up doors shall be manually operated with a key.
- 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 floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- 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.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.
- 120/240 VAC load center location.
- The generator gauge panel.
- A 100 ampere, 240 VAC, single phase shore power receptacle shall be located in this compartment.
- The controls for the specified light tower(s).

CURBSIDE COMPARTMENT - REAR (C4)

The interior useable compartment space shall be approximately 70.5" wide.

- This compartment shall have a R•O•M series IV roll-up door.
- The compartment door opening shall be approximately 63.5" 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.
- A keyed 1250 cylinder lock shall be provided on bottom rail of the roll-up door.
- The roll-up doors shall be manually operated with a key.
- 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 floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) adjustable shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.
 - Any equipment mounting on adjustable shelf shall be provided by SVI_Trucks_Demo_1332_fwi_20 after delivery.
 - The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) vertical compartment partition(s) provided dividing the compartment into fore and aft sides. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet. Partition shall be approximately Fill In from forward wall of compartment.

- Partition shall be bolted in position at base and top of partition.
 - The above component(s) shall have a smooth un-painted finish.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

REAR COMPARTMENT - CENTER (RC1)

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

The rear center compartment shall begin just above the bumper height and be as high as the side compartments, unless specified otherwise. The body sub-frame shall extend at least 20" into the compartment to allow for the spring loaded body mounts.

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.
- A keyed 1250 cylinder lock shall be provided on bottom rail of the roll-up door.
- The roll-up doors shall be manually operated with a key.
- 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 floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" 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.

- The above component(s) shall have a smooth un-painted finish.
- 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 70" 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 SVI_Trucks_Demo_1332_fwi_20 after delivery.

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 SEOW 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 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 duplex straight-blade receptacle
 - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
 - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
 - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
- One (1) Akron Brass model EJB-VMT aluminum treadplate vertical mounting bracket for specified power distribution box shall be provided and mounted in compartment per SVI_Trucks_Demo_1332_fwi_20.
- The fairlead roller shall be mounted directly to the reel.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

BODY OPTIONS AND UPGRADES

NO Plastic Grating (LR, WA)

LOWER SIDE BODY PROTECTION - RUB RAIL

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

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

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

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

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

FRONT GRAVEL GUARDS

Gravel guards shall be provided on front lower body corners. Guards shall be 12" high, extend from behind cab or step and wrap around to the front compartment door opening fabricated from 20 gauge brushed stainless steel.

ROLL-OUT AWNING STREETSIDE

A Girard G-2000, 120 VAC powered, automatic retractable lateral arm awning shall be provided and mounted on the body. 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 20' long x 5-1/4" deep, 7-3/4" high with a 9' - 9" outward projection, (length refers to box length; actual fabric length will be shorter).

The G-2000 shall deploy and retract using a 120V AC motor with manual override (to retract awning in the event of a power failure). The controls shall be located in compartments S1 for a streetside awning, and C1 for a curbside awning.

The awning shall have a system to detect canopy motion. The awning shall automatically retract when the canopy reaches a certain level of movement. The G-2000 has a Limited Lifetime Warranty. Wind and rain damage are not covered.

- The TOPGUN FR LITE awning fabric color shall be red (#736-LT).

The specified awning above shall be recess mounted into upper body side. An aluminum box enclosure shall be fabricated and recessed into upper body side for awning mounting and painted same color as upper body. The recessed awning shall add approximately 1.5" to body width.

AWNING HOUSING COLOR

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

ROLL-OUT AWNING CURBSIDE

A Girard G-2000, 120 VAC powered, automatic retractable lateral arm awning shall be provided and mounted on the body. 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 20' long x 5-1/4" deep, 7-3/4" high with a 9' - 9" outward projection, (length refers to box length; actual fabric length will be shorter).

The G-2000 shall deploy and retract using a 120V AC motor with manual override (to retract awning in the event of a power failure). The controls shall be located in compartments S1 for a streetside awning, and C1 for a curbside awning.

The awning shall have a system to detect canopy motion. The awning shall automatically retract when the canopy reaches a certain level of movement. The G-2000 has a Limited Lifetime Warranty. Wind and rain damage are not covered.

- The TOPGUN FR LITE awning fabric color shall be red (#736-LT).

The specified awning above shall be recess mounted into upper body side. An aluminum box enclosure shall be fabricated and recessed into upper body side for awning mounting and painted same color as upper body. The recessed awning shall add approximately 1.5" to body width.

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.

WALK-IN INTERIOR FINISH DETAILS

DESK, CABINET, CONSOLE FINISH

All specified interior desks, cabinets, overhead cabinets, or consoles shall be fabricated from formed 1/8" 3003 H14 alloy smooth aluminum.

The use of wood materials or laminated surfaces in the construction of desks, cabinets, overhead cabinets, or consoles will not be allowed. There will be **No Exceptions** allowed on specified ruggedized finish.

INTERIOR COMPONENT FINISH

After fabrication is completed all specified desk(s) or cabinet(s) shall be painted with a hammer tone powder coat paint finish for a hard durable surface.

Powder coat shall be quartz grey. Cardinal T243-GR301

INTERIOR SPECIFICATIONS

INTERIOR INSULATION

Following the sheet metal fabrication the roof area, upper exterior walls and the entry door of the apparatus body shall be insulated with Dow Thermax, or equal 1-1/2" glass-fiber reinforced polyisocyanurate foam core laminated between 1.0 mil smooth, reflective aluminum foil facers on both sides, with an R9.8 value. The reinforcement, along with chemical modifications, contributes to fire resistance and dimensional stability. This insulation shall be the type that will not absorb moisture, move once in place or deteriorate. Mat type fiberglass or spray in foam insulation is not acceptable.

INTERIOR FINISH

The interior of the apparatus body shall have a fully maintenance free and durable finish. The interior finish shall be installed on the ceiling, front wall, and interior side walls from top of exterior compartments to ceiling height.

The interior panels shall be installed with sheet metal screws with gray plastic plugs covering the screws. The seams between FRP panels, interior corners, and exterior corners shall be trimmed with gray plastic molding.

The interior finish shall be pearl gray pebble grain FRP.

INTERIOR WALKWAY FLOOR

The NFPA compliant 3/16" aluminum tread plate walkway floor shall be installed above the barrier, with a 2" high vertical break on each side of the floor panel to form a watertight splash and kickboard along the walkway sides.

The walkway floor area continuously welded at all cross seams to provide a watertight finish, so that a water hose may be used to flush-out walkway area.

INTERIOR SUB-FLOOR

Above the body sub frame walk in areas shall be an isolation sheet to prevent outside elements from permeating the acoustic and thermal barrier. The isolation sheet shall be fabricated from the same type of material as is used in the subframe, and flanged on sides with a 1" high vertical break.

Plascore PP-30, 3/4" thick or similar material shall be placed between the isolation sheet and finished floor for its structural, acoustic and thermal values.

AIR CONDITIONER - HEATER

The completed unit shall be supplied with one (1) Red Dot model R-9759-1, air conditioning/heater unit(s) with a headliner mounted evaporator.

Unit shall have a rating of 25,000 BTU cooling and 30,000 BTU heat with air delivery of over 400 CFM through five outlets. Unit shall be 6.5" high x 27" wide x 17.6" length and weigh 40 lbs.

FRONT INTERIOR AREA (IF1)

Interior Equipment Options

MAGNETIC WHITEBOARD

There shall be one (1) magnetic whiteboard(s), approximately (insert actual dimensions) located on wall, location per SVI_Trucks_Demo_1332_fwi_20.

STREETSIDE INTERIOR AREA (IS1)

- The interior deck area over the top of the exterior side compartments shall be un-painted brushed stainless steel.

120 VAC INTERIOR OUTLETS

- There shall be one (1) 120 VAC custom fabricated outlet strip provided with approximately two (2) duplex outlets per foot in height. Strip shall be approximately long.
 - Outlet(s) shall be powered through the on-board generator system.
 - The outlet shall be located on rearward wall, upper left area.

STREETSIDE INTERIOR AREA (IS2)

WINDOW(S)

There shall be one (1) 32" wide x 16" high, double-paned insulated, horizontal sliding window(s) installed. The window shall slide open towards the front of the vehicle such that wind pressure would tend to shut the window. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish. Sliding style windows shall be complete with a sliding screen.

INTERIOR CABINET - OVERHEAD

- There shall be one (1) approximately 42" wide x 14" high x 14" deep overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface.
- One (1) OnScene Access white LED light(s) mounted in cabinet(s).
- The above cabinet(s) shall have lift-up type door(s) with dry-erase outer surface.
- The compartment light(s) shall be controlled by a switch actuated by the compartment door.
 - Each cabinet door shall have one (1) winged cam latch mechanism to hold door in closed position. Cabinet door latch required per NFPA 1900 in occupied areas while vehicle is in motion.

CAB, CAB DESK, CABINET - VDC COMPONENTS

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

INTERIOR UNDER CABINET LED LIGHTS

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

- There shall be one (1) 120 VAC outlet(s) located inside cabinet against the back wall.
 - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
 - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
 - The outlet shall be located on rear wall, upper left area.

INTERIOR BENCH SEAT

The interior body walkway shall be provided with a squad bench seat for two (2) personnel along the side wall. The seat cushion shall be approximately 3" thick with a 3/4" plywood platform for stability. The seat backrest shall be approximately 12" high x 2" thick and constructed the same as the seat cushion.

The cushion and seat back shall be covered with vinyl heavy duty material.

Seat material color shall be gray.

INTERIOR BENCH SEAT STORAGE

The bench seat base shall be fabricated of aluminum tread plate **as part of the exterior compartment.**

The above specified seat(s) shall not be provided with automotive seat belts and therefore will not be considered a riding position.

CURBSIDE INTERIOR AREA (IC1)

MAGNETIC WHITEBOARD

There shall be one (1) magnetic whiteboard(s), approximately (insert actual dimensions) located on wall, location per SVI_Trucks_Demo_1332_fwi_20.

Will be whiteboard wall between the upper and lower countertop.

INTERIOR CABINET - COUNTER HEIGHT

- There shall be two (2) interior counter height cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum approximately 64" wide.
- One (1) OnScene Access white LED, full height compartment light, vertically mounted.
 - The above cabinet(s) shall have a 4" x 4" toe kick area at the base to allow for the top surface to be used as a working surface.
 - The above cabinet(s) shall have double vertically hinged aluminum door(s) with a Southco push-release style latches and painted with a hammer tone powder coat paint finish to match cabinet color choice.
- The compartment light(s) shall be controlled by a switch actuated by the compartment door.
 - Each cabinet shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
 - There shall be one (1) vertically adjustable shelf in each of the above cabinets. It shall have a 1.25" lip to contain items while minimizing space used.

WORK SURFACE

There shall be a work surface installed above the specified cabinet(s). The work surface shall be fabricated with 1/8" thick smooth aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

INTERIOR CABINET - OVERHEAD

- There shall be two (2) approximately 34" wide x 14" high x 14" deep overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface.
- Two (2) OnScene Access white LED light(s) mounted in cabinet(s).
- The above cabinet(s) shall have lift-up type door(s) with dry-erase outer surface.
- The compartment light(s) shall be controlled by a switch actuated by the compartment door.
 - Each cabinet door shall have one (1) winged cam latch mechanism to hold door in closed position. Cabinet door latch required per NFPA 1900 in occupied areas while vehicle is in motion.

CAB, CAB DESK, CABINET - VDC COMPONENTS

- There shall be two (2) Blue Sea Systems ST series blade type fuse block(s) with screw type terminals for both positive and negative buss with cover provided for distribution of up to six (6) 30 amp, 12 VDC circuits.
- The fuse block shall be protected by a 60 amp maxi fuse located at the source.
- Fuse block shall be wired battery direct.
- Fuse block shall be located in the top left interior corner.

INTERIOR UNDER CABINET LED LIGHTS

Two (2) OnScene Solution model #70152, 10" x 6" x 7/8", 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided under cabinet. Each light shall be individually switched with a high/low intensity setting. In addition light(s) will be capable of a five (5) second delay after switching off.

- There shall be two (2) 120 VAC outlet(s) located inside cabinet against the back wall.
 - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
 - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
 - The outlet shall be located on rear wall, upper left area.

120 VAC INTERIOR OUTLETS

- There shall be one (1) 120 VAC outlet(s) located in the interior area of the body.
 - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
- There shall be one (1) approximate 4' long 120 VAC outlet strip(s) with straight blade household type outlets provided.
 - 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 rearward wall, upper left area.

CURBSIDE INTERIOR AREA (IC2)

There shall be a side entry door located in this area.

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 10.

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:

- 24) SAE J156, *Fusible Links*
- 25) SAE J553, *Circuit Breakers*
- 26) SAE J554, *Electric Fuses (Cartridge Type)*
- 27) SAE J1888, *High Current Time Lag Electric Fuses*
- 28) 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;

ROCKER SWITCH PANEL

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

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

- Forward section, driver side of cab console shall include;
 - No components provided at this position.
- Forward section, officer side of cab console shall include;

- No components provided at this position.
- Cab console, panel position forward shall include;
- There shall be one (1) communications radio and/or siren 3" filler plate(s) with black powdercoat paint finish provided for future radio/siren location in specified console.

ELECTRONIC SIREN

One (1) Federal PA300-012MSC, 200 watt electronic siren with standard 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.

The directional light control head model 330104-SB (or equal) shall be located in the cab within easy reach of the Driver.

- Cab console, panel position center shall include;
- Cab console, panel position rearward shall include;

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

- Cab console, rear position shall include;
- Cab console area provided with open storage area.
- The open storage area shall be provided with two (2) adjustable dividers.

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.

Where an enclosed battery compartment is provided, it shall be ventilated to the exterior to prevent the buildup of heat and explosive fumes. The batteries shall be protected against vibration and temperatures that exceed the battery manufacturer's recommendation.

BATTERY SWITCH

One (1) battery "On/Off" switch shall be provided and located in cab within easy reach of Driver.

- 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) Kussmaul model Auto Charge 4012 triple battery conditioner, with 120 VAC input and 40 amp, 12 volt output shall be provided. This system shall monitor the condition of batteries and provide an electrical current at variable rates to overcome battery failure.

BATTERY CHARGE INDICATOR

A Kussmaul 091-199-001 charge indicator display shall be provided and located near drivers' door area. This single battery system indicator is a suppressed zero bar graph voltage display which may be installed in any 12 volt system.

- The charge indicator display shall be located at Driver step area.

SHORE POWER INLET

One (1) Kussmaul 120 VAC, 20 amp Super Auto-Eject shore power inlet(s) shall be provided. The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged.

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

- Auto eject inlet cover color shall be red.
- The shore power plug shall be located near the Driver door area.

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.

RIGHT SIDE VIEW CAMERA

There shall be one (1) ASA Voyager observation camera system provided and installed on completed unit. The system shall include one (1) model VCMS50RCM high resolution super CMOS bullet style camera with chrome housing on right side of cab.

- The camera image shall be displayed on a Voyager AOM718 or latest model, 7" color flat panel display (up to 3 camera inputs) located within the driver's range of view.

INTERIOR LED LIGHTS

Two (2) OnScene Solution model #70156, 10" x 10" x 7/8", 10-30 VDC, surface mount dual red and white LED light(s) with clear lens shall be provided throughout the vehicle. In addition light(s) will be capable of a five (5) second delay after switching off.

The light(s) shall be switched with high/low intensity setting at the entry door(s). An Innovative Controls black back-lit switch panel shall be provided to control specified lighting or other control switching.

INTERIOR LIGHT SWITCH

- There shall be One (1) interior light switch panel located on the curbside, forward bulkhead wall.

TAIL LIGHTS

Rear body tail lights shall be vertically mounted and located per Federal Motor Vehicle Safety Standards, FMVSS and Canadian Motor Vehicle Safety Standards CMVSS. The following lights shall be furnished;

- Two (2) Federal Signal FireRay FR6-ARROW amber LED turn lights
- Two (2) Federal Signal FireRay FR6-BTT red LED stop/tail lights
- Two (2) Federal Signal FireRay FR6-BACKUP clear LED back-up lights

Each light shall have a chrome flange.

MIDSHIP MARKER/TURN SIGNAL

Two (2) Whelen model T0A00MAR 2" round amber LED midship body clearance marker/turn signal lights shall be provided and installed, one (1) light on each side of the body, in forward wheel well of rear axle. Midship marker/turn lights shall be wired to the headlight circuit of the chassis.

MARKER LIGHTS

The body shall be equipped with all necessary side and rear clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) and Canadian Motor Vehicle Safety Standards (CMVSS). Clearance lights on body shall be connected to the clearance light circuit of the chassis.

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-50-W 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 shall 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 57 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 LEDs passing light through individual 25-40 degree "flood" optics
- Circuit 3 shall have 24 x 5w LEDs passing light through individual 60-90 degree "scene" optics

The housing shall be powdercoat painted white.

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

SIDE LED SCENE LIGHTS

There shall be four (4) HiViz Guardian Elite model FT-GESM, 9" x 7" surface mounted scene light(s) provided on the upper body. Light quantity shall be divided equally per side. The Guardian series light shall have 12,290 useable lumens each. Each light shall have a chrome flange. T

Two (2) switches shall be provided, one (1) for the streetside scene lights, and one (1) for the curbside scene lights.

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

REAR LED SCENE LIGHTS

Two (2) HiViz Guardian Elite model FT-GESM, 9" x 7" surface mounted scene lights shall be provided on the upper rear body to light the work area immediately behind the vehicle. The Guardian series light shall have 12,290 useable lumens each. Each light shall have a chrome flange.

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 Switch Panel in Cab.

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

TRAFFIC DIRECTIONAL LIGHT

One (1) Federal SignalMaster **Latitude SL85-A548**, 42" eight (8) LED light, traffic directional warning device with 30' control cable shall be located on upper rear body.

The directional light control head model 330104-SB (or equal) shall be located in the cab within easy reach of the Driver.

The traffic directional light shall be surface mounted on upper rear body.

WARNING LIGHT PACKAGE

Each apparatus shall have a system of optical warning devices that meets or exceeds the requirements of this section.

The optical warning system shall consist of an upper and a lower warning level. The requirements for each level shall be met by the warning devices in that particular level without consideration of the warning devices in the other level.

For the purposes of defining and measuring the required optical performance, the upper and lower warning levels shall be divided into four (4) warning zones. The four zones shall be determined by lines drawn through the geometric center of the apparatus at 45 degrees to a line drawn lengthwise through the geometric center of the apparatus. The four (4) zones shall be designated A, B, C, and D in a clockwise direction, with zone A to the front of the apparatus.

Each optical warning device shall be installed on the apparatus and connected to the apparatus's electrical system in accordance with the requirements of this standard and the requirements of the manufacturer of the device.

A master optical warning system switch that energizes all the optical warning devices shall be provided.

The optical warning system on the fire apparatus shall be capable of two (2) separate signaling modes during emergency operations. One (1) mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right-of-way. One (1) mode shall signal that the apparatus is stopped and is blocking the right-of-way. The use of some or all of the same warning lights shall be permitted for both modes provided the other requirements of this chapter are met.

A switching system shall be provided that senses the position of the parking brake or the park position of an automatic transmission. When the master optical warning system switch is closed and the parking brake is released or the automatic transmission is not in park, the warning devices signaling the call for the right-of-way shall be energized. When the master optical warning system switch is closed and the parking brake is on or the automatic transmission is in park, the warning devices signaling the blockage of the right-of-way shall be energized. The system shall be permitted to have a method of modifying the two (2) signaling modes.

The optical warning devices shall be constructed or arranged so as to avoid the projection of light, either directly or through mirrors, into any driving or crew compartment(s). The front optical warning devices shall be placed so as to maintain the maximum possible separation from the headlights.

Steadily burning, non flashing optical sources shall be permitted to be used.
Control System: Federal Signal

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.

ZONE B & D - SIDE WARNING LIGHTS

There shall be four (4) Federal Signal FR9 LED Light(s) provided, two (2) each side. The light head shall include thirteen (13) programmable flash patterns, four (4) flash modes and Hi/Lo intensities.

Each Light shall have:

- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

- Flash Pattern shall be Federal Signal DoubleFlash 150
- Flash Pattern shall be Federal Signal All Flash (Default Single Color)
- The above pair of Lights shall synchronized and flash simultaneously.

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

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Federal Signal FR9 LED Light(s) provided, one (1) each side. The light head shall include thirteen (13) programmable flash patterns, four (4) flash modes and Hi/Lo intensities.

Each Light shall have:

- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

- Flash Pattern shall be Federal Signal DoubleFlash 150
- Flash Pattern shall be Federal Signal All Flash (Default Single Color)
- The above pair of Lights shall synchronized and flash simultaneously.

The Lights shall be controlled at the Switch Panel in 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

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

There shall be two (2) Federal Signal FR6 LED Light(s) provided, one (1) each side. The light head shall include thirteen (13) programmable flash patterns, four (4) flash modes and Hi/Lo intensities.

Each Light shall have:

- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

- Flash Pattern shall be Federal Signal DoubleFlash 150
- Flash Pattern shall be Federal Signal All Flash (Default Single Color)
- The above pair of Lights shall synchronized and flash simultaneously.

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

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

There shall be two (2) Federal Signal FR6 LED Light(s) provided, one (1) each side. The light head shall include thirteen (13) programmable flash patterns, four (4) flash modes and Hi/Lo intensities.

Each Light shall have:

- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

- Flash Pattern shall be Federal Signal DoubleFlash 150
- Flash Pattern shall be Federal Signal All Flash (Default Single Color)
- The above pair of Lights shall synchronized and flash simultaneously.

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

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

FIRST PAIR FRONT RUB-RAIL LIGHTS

There shall be two (2) Federal Signal Micropulse12 LED Light(s) provided, one (1) each side.

Each Light shall have:

- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

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

FIRST PAIR REAR RUB-RAIL LIGHTS

There shall be two (2) Federal Signal Micropulse12 LED Light(s) provided, one (1) each side.

Each Light shall have:

- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

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

ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be two (2) Federal Signal FR6 LED Light(s) provided, one (1) each side. The light head shall include thirteen (13) programmable flash patterns, four (4) flash modes and Hi/Lo intensities.

Each Light shall have:

- Red LEDs
- Clear Lens

Each light shall have a chrome flange.

- Flash Pattern shall be Federal Signal DoubleFlash 150
- Flash Pattern shall be Federal Signal All Flash (Default Single Color)
- The above pair of Lights shall synchronized and flash simultaneously.

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

LINE VOLTAGE ELECTRICAL SYSTEM

MARATHON PTO GENERATOR

The vehicle shall be equipped with a Marathon harsh duty Magna Plus series, two (2) bearing generator system with a capacity of 40,000 watts at 120/240V VAC, 2-Phase or 120/208V VAC, 3-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.

12-LEAD GENERATOR CONNECTED VOLTAGE

The above generator shall be internally wired as 120/208V "Wye" as to provide 120V on any one of the three (3) load carrying conductors too the current carrying ground conductor or 208V between any combination of pairs of the load carrying conductors.

GENERATOR CONTROL

The generator shall be engaged at the switch panel in the cab.

GENERATOR MOUNTING

The generator shall be mounted between 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 between and/or to the sides of the chassis frame rails and removable so that the generator can be lowered from under the apparatus for service if necessary. The generator case shall extend above the top edge of the chassis frame rails and requires additional subframe height for clearance. There shall also be an access panel added to the body floor above the generator (where possible) to allow for wiring box access for service.

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 280 series.

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.

SHORE POWER OUTLET - 100 AMP

A 100 ampere, 240 volt, single phase shore power outlet shall be provided on the apparatus to provide power to an external electrical circuit. A matching 100 ampere plug shall be shipped with the apparatus for connection to customer supplied external wiring.

Shore power outlet shall be wired from the apparatus main circuit breaker in the circuit breaker distribution panel to feed an external source.

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;

- (y) Pictorial representations of circuit logic for all electrical components and wiring
- (z) Circuit identification
- (aa) Connector pin identification
- (bb) Zone location of electrical components
- (cc) Safety interlocks
- (dd) Alternator–battery power distribution circuits
- (ee) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems

LIGHT TOWER

One (1) Command Light Knight 2, KL Series light tower(s) shall be provided and installed on the completed unit.

The Command Light shall be covered by a five (5) year limited warranty from defects in materials and workmanship. An operation, maintenance, and parts manual shall be provided with the completed unit.

Light Tower Construction and Design

The Command Light assembly shall be of aluminum construction, with stainless steel shafts and bronze bushings for long life and low maintenance.

The electrically controlled unit shall not require usage of the vehicle's air supply for operation, thereby eliminating the chance for air leaks in the vehicle braking system. Hydraulic or pneumatic type floodlights are not acceptable alternatives to the specified all electric light tower.

The light tower shall be tested to in wind conditions of 90 mph (150 kph) minimum. Other type floodlights that have not been tested to these conditions are not acceptable.

The light tower shall be capable of overhanging the side or back of the vehicle to provide maximum illumination to the vicinity adjacent to the vehicle for the safety of emergency personnel in high traffic conditions. Any tower that is only capable of rotations at the top of a pole is not an acceptable alternative to the specified tower.

Light Tower Electrical System

The light tower shall be a two-stage articulating device with a lighting bank on top of the second stage capable of continuous 360 degree rotation. The light shall be elevated by electric linear actuators, one (1) actuator shall elevate the light bank and one (1) actuator shall adjust the light bank angle from 0 to 110 degrees. Power for the light bank shall be supplied through power collecting rings thus allowing continuous 360 degree rotation in either direction.

The tower base shall have a light that illuminates the envelope of motion during any movement of the light tower mast per NFPA 1900.

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 1900.

Light Tower Floodlights

The Command Light model KL415A-FS shall be equipped with the following bank of floodlights:

Floodlight manufacturer:	FRC
Number of lamp heads:	Six (6) Spectra SPC-K20-BOB
Voltage:	120 volts
Watts of each lamp head:	220 watt
Total watts of light tower:	1,700 watts
Total Lumens:	120,000
Configuration:	The light heads shall be mounted with three (3) on each side of the light tower, giving two (2) vertical lines of three (3) when the lights are in the upright position

Light Tower Strobe Indicator

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

The lens color for the strobe light shall be blue.

Light Tower Backlight Option

A backlight option shall be provided on the light tower. The lower pair of light heads shall be capable of being rotated about a horizontal axis 180 degree, providing light down on the vehicle or to the opposite side of the vehicle while allowing the fixed lights to remain pointed at the scene.

The hand-held remote control shall have an additional switch supplied for the backlight rotation option.

Light Tower Paint

The light tower shall be electro-statically powder coated with a hammer tone gray color.

Light Tower Controls

The light tower(s) shall be operated with a hand-held 15-foot umbilical line remote control. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature. The remote control shall be located per the itemized compartment list and include;

Three (3) switches; one (1) for each pair of lights.

One (1) switch for light bank rotation.

One (1) switch for elevating lower stage.

One (1) switch for elevating upper stage.

One (1) switch for optional light bank rotation.

One (1) switch for the optional strobe.

One (1) indicator light to indicate when light bank is out of the roof nesting position.

One (1) indicator light to indicate when light bank is rotated to proper nesting position.

Light Tower Mounting

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

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

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

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

EQUIPMENT PAYLOAD WEIGHT ALLOWANCE

In compliance with NFPA 1900 standards, the special service vehicle shall be designed for an equipment loading allowance of 4,000 lbs. of SVI_Trucks_Demo_1332_fwi_20 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 SAC-44-E NFPA approved folding aluminum wheel chocks provided for 44" diameter tires that together will hold the vehicle when loaded to its GVWR or GCWR, on a hard surface with a 20 % grade, with the transmission in neutral, and the parking brake released.
 - The wheel chock(s) shall be mounted behind rear wheels, below body on streetside.
- Two (2) Streamlight Fire Vulcan C4 LED flashlight(s) with shoulder strap shall be provided with 80,000 candela and 3 hour run time. Each flashlight shall be orange in color and have a 12 volt DC charger and vehicle mount kit. Each flashlight shall have an LED spotlight style bulbs and reflectors. The flashlight(s) shall be wired to battery direct unless otherwise specified by SVI_Trucks_Demo_1332_fwi_20.
 - Two (2) flashlight(s) shall be mounted on the completed unit in the lower area of compartment S1.

REMAINING NFPA MINOR EQUIPMENT BY PURCHASER

All other minor equipment not specified above, but recommended by NFPA 1900 for special service vehicles section A.8.4 shall be supplied and mounted by SVI_Trucks_Demo_1332_fwi_20 before the unit is placed in emergency service.