Riverside County Fire Department
Perris, CA
Haz-Mat SVI # 1256
Production Specification

ROCK SOLID QUALITY

Riverside County Fire Department

INTENT OF SPECIFICATIONS

It shall be the intent of these specifications to provide a complete apparatus equipped as hereinafter and as specified. With a view to obtaining the best results and the most acceptable apparatus for service in the Department, these specifications cover only the general requirements as to the type of construction and tests to which the apparatus must conform, together with certain details as to finish, equipment and appliances with which the successful bidder shall conform. Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction for all features. The manufacturer shall provide loose equipment only when specified by the customer. The (NFPA) 1901, Standard for Automotive Fire Apparatus, unless otherwise specified as requested by the customer in these specifications, shall prevail.

The apparatus must meet all NFPA, DOT, ICC, AE, TRA, FMVSS and local state Motor Vehicle Requirements.

It is required that the apparatus be manufactured to current NFPA edition standards, all NFPA equipment (LOOSE EQUIPMENT) not specified in the specifications will not be provided by the contractor.

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction that have been in business and construction for a minimum of twenty-five (25) years.

The bidder of the apparatus herein specified; shall be wholly owned (100%) and managed by a Company, Corporation, and/or Parent Company that is wholly based, and permanently resides in the United States of America.

The Company, Corporation, and/or Parent Company and all assets belonging to such; shall be wholly owned and managed (100%) by the entities specified above.

The bidder shall state the location of the manufacturing facility where the apparatus is to be built and the location of the parent company if a subsidiary of a manufacturer.

The bidder shall provide satisfactory evidence of their ability to construct the apparatus specified in the bidders manufacturing facilities.

The bidder’s representation shall state the length of time representing the manufacturer of specified apparatus.

Due to the severe service requirements the department will impose on the apparatus as specified, each bidder shall provide a list of at least six (6) departments in which similar apparatus utilizing the brand of chassis proposed have been in service for over one year. This list shall include contact names and phone numbers.

The bid shall be accompanied by a set of “Contractor’s Specifications” consisting of a detailed description of the apparatus being furnished under this contract which conform. Computer runoff sheets are not acceptable as

"Contractor's Specifications". Item compliance shall be indicated in the "Yes/No" column of each item by all Bidders. Note: Each bidder shall submit their bid in the same sequence as these specifications to allow the department to easily compare.

These specifications shall indicate size, type, model and make of all component parts and equipment.

QUALITY AND WORKMANSHIP

The design of the Apparatus shall embody the latest approved automotive engineering practices.

The workmanship must be of the highest quality in its respective field. Special consideration will be given to the following points: Accessibility of the various units, which require periodic maintenance, ease of operation and symmetrical proportions.

Construction shall be rugged and ample safety factors shall be provided to carry loads as specified and to meet both on and off road requirements and to speed conditions as set forth under "Performance tests and requirements".

Welding shall be employed in the assembly of the apparatus in a manner that will not prevent the ready removal of any component part for service or repair, with apparatus bodies of bolt together design not being acceptable.

All steel welding shall follow American Welding Society requirements for AWS D1.1:2012 Structural Welding Code for welding steel structural assemblies. All aluminum welding shall follow American Welding Society requirements for AWS D1.2/D1.2M:2003 Structural Welding Code for any type structure made from aluminum structural alloys. All sheet metal welding shall follow American Welding Society AWS D9.1M/D9.1:2006 Structural Welding code for Arc/Braze requirements of non-structural materials. All pressure pipe welding shall follow American Society of Mechanical Engineers ASME IX/ ASME B31:2010 requirements to the qualification of procedures in welding and brazing, in accordance with the ASME Boiler and Pressure Vessel Code and the ASME B31 Code for Pressure Piping. Flux core arc welding to use alloy rods, type 7000, American Welding Society AWS standards A5.20-E70T1. The manufacturer shall be required to have an American Welding Society certified welding inspector in plant during testing operations within working hours to monitor weld quality.

Employees classified as welders shall be tested and certified to meet American Welding Society and American Society of Mechanical Engineers welding codes.

DELIVERY

The bidder shall provide the number of calendar days from the date the bid is awarded to the delivery of the completed unit.

A qualified delivery engineer representing the contractor shall deliver the apparatus and instruct the Fire

Department personnel in the proper operation, care and maintenance of the equipment delivered.

PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be conducted with the apparatus fully loaded to its estimated in-service weight and shall be capable of the following performance while on dry paved roads that are in good condition and for a continuous run of ten (10) miles or more, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. The successful bidder shall furnish a Weight Certificate showing weights on front axle, rear axles and total weight for the completed apparatus at time of delivery.

A. The apparatus shall be capable of accelerating to 35 MPH (55 km/hr) from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed RPM of the engine.

B. The apparatus, fully loaded, shall be capable of obtaining a minimum top speed of 50 MPH (80 km/hr) on a level dry concrete highway with the engine not exceeding its governed RPM (fully loaded).

C. The service brakes shall be capable of stopping a fully loaded vehicle in 35ft (10.7 m) at 20 mph (32.2 km/hr) on a level concrete highway. The air brake system shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.

D. The apparatus, when fully loaded, shall have not less than 25 percent or more than 50 percent of the weight on the front axle, and not less than 50 percent nor more than 75 percent on the rear axle.

E. The contractor shall have the Underwriter's Laboratories, LLC conduct the tests of the apparatus as in accordance with standard practices required by the Underwriter Laboratories, LLC (Guide for the Certification of Fire Department Pumper latest edition). A copy of all tests shall accompany the Apparatus. (For apparatus sold within Canadian ULC S515 latest revision shall prevail).

F. The contractor shall furnish copies of the Manufacturer's record construction details when delivered.

INFORMATION REQUIRED

The manufacturer shall supply at time of delivery, a complete operation and maintenance manual covering the completed apparatus as delivered.

A Fire Apparatus Safety Guide published by Fire Apparatus Manufacturer's Association shall be provided with the apparatus upon delivery. 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 firefighting apparatus manufactured on either custom or commercial chassis.

A permanent plate shall be mounted in the driver's compartment to specify the quantity and type of the

following fluids used in the vehicle: Engine oil, engine coolant, and chassis transmission fluid, generator fluid (if applicable) and drive axle lubrication fluid.

The manufacture shall supply the final certification of GVWR and GAWR on a nameplate affixed to the vehicle.

A permanent plate in the driver's compartment shall be installed, specifying the seating capacity of the enclosed cab.

Signs that state "OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION" shall be provided and will be visible from each seated position. An accident prevention sign shall be located at the rear step area of the apparatus. It shall warn all personnel that standing on the step while apparatus is in motion shall be prohibited.

LIABILITY

The bidder, if their bid is accepted, shall defend any and all suits and assume all liability for the use of any patented device or article forming part of the apparatus or any appliance provided under the contract.

GENERAL CONSTRUCTION

The apparatus shall be designed with due consideration to distribution of load between the front and rear axles, so that all specified equipment, including filled water tank, a full complement of personnel and fire hose will be carried without injury to the apparatus. Weight balance and distribution shall be in accordance with the recommendations of the (NFPA) 1901, Standard for Automotive Fire Apparatus, documentation.

The apparatus shall be designed so that all recommended daily maintenance checks can be performed easily by the operator without the need for hand tools. Apparatus components that interfere with repair or removal of other major components must be attached with fasteners (cap, screws, nuts, etc.) so that the components can be removed and installed with normal hand tools. These components must not be welded or otherwise permanently secured into place.

The GAWR and GVWR of the chassis shall be adequate to carry the fully equipped apparatus including all tanks filled, the specified hose load, unequipped personnel weight, ground ladders and a miscellaneous equipment allowance per NFPA criteria. It shall be the responsibility of the purchaser to provide the contractor with the weight of equipment to be carried if it is in excess of the allowance as set forth by NFPA.

The unequipped personnel weight shall be calculated at 250 lbs. per person times the maximum number of persons to ride on the apparatus.

The height of the fully loaded vehicle's center of gravity shall not exceed the chassis manufacturer's maximum limit.

The front to rear weight distribution of the fully loaded vehicle shall be within the limits set by the chassis manufacturer. The front axle loads shall not be less than the minimum axle loads specified by the chassis manufacturer, under full loads and all other loading conditions.

The difference in weight on the end of each axle, from side to side, when the vehicle is fully loaded and equipped shall not exceed 7 percent.

The apparatus shall be so designed that the various parts are readily accessible for lubrication, inspection, adjustment and repair.

Where special tools manufactured or designed by the contractor and are required to provide routine service on any component of the apparatus built or supplied by the contractor, such tools shall be provided with the apparatus.

EXCEPTIONS TO SPECIFICATIONS

The following specifications shall be strictly adhered to. Exceptions shall be allowed if they are equal to or superior to that as specified and providing they are listed and entirely explained on a separate page entitled "Exceptions to Specifications". The exceptions list to refer to specification page number and paragraph.

Proposals taking total exception to specifications or total exception to certain parts of the specifications such as Electrical Systems, Chassis, Body or Pump, will not be accepted.
Prototype units will not be acceptable. Apparatus shall be inspected upon completion for compliance with specifications.

Deviations will not be tolerated and will be cause for rejection of Apparatus unless they were originally listed in bidder’s proposal and accepted in writing by the department.

If the bidder takes an exception, on the exception page, the bidder must state an option price to bring their specifications into full compliance with the Department specifications.

Failure to provide this information shall be cause to reject the proposal as being non-responsive.-

Copied or run off sheets of these specifications shall be unacceptable and the bid will be rejected no exceptions.

PURCHASER'S RIGHTS

The Purchaser reserves the right to accept or reject any or all bids as it deemed in their best interests.

BID/PROPOSAL DRAWINGS

For purposes of evaluation, the bidder shall provide a drawing illustrating, but not limited to, the overall dimensions, wheelbase, and overall length of the proposed apparatus and other specified equipment, shall be required to be included with the bidder's proposal package.

The drawings shall be large "D" size (minimum 24.00 inches x 36.00 inches).

Smaller size drawings, "similar to" drawings or general sales drawings, shall not be acceptable.

Failure to provide a bid evaluation drawing in accordance with these specifications shall be cause for rejection of the bid proposal.

PRE-CONSTRUCTION DRAWINGS

After the award of the bid, the contractor shall provide detailed colored engineering drawings including, but not limited to, the overall dimensions, wheelbase, and overall length of the proposed apparatus for use during the pre-construction conference.

The drawings shall include, but shall not be limited to the right, left, top, front and rear views of the apparatus.

SINGLE SOURCE MANUFACTURER

Bids shall only be accepted from a single source apparatus manufacturer.

The definition of single source manufacturer is a company that designs and manufactures their products utilizing an approach that includes complete product integration, including the apparatus chassis, cab, and body modules being constructed, assembled, and tested on company premises only.

Warranties qualified to the chassis and body design construction (excluding vender component warranties such as engine, axles, transmission, and pumps, etc.) will be from a single source manufacturer and not separated between manufacturers (i.e. body and chassis). The bidder shall provide evidence of maintaining compliance to this requirement.

TAG-ON ORDERS-COOPERATIVE PURCHASING

Other fire departments, metropolitan regions, or municipalities may purchase apparatus and equipment from same manufacture similar to the Apparatus and Equipment that is the subject of this Contract held by the same manufacture. The following terms shall apply to any such tag-on orders:

(a) Changes - Tag-on orders utilizing the same specification as the Apparatus and Equipment that is the subject of this Contract in order to provide favorable pricing and lead-times to other buyers due to having such specification fully engineered. Limited changes will be permitted. Such changes will be captured in the pre-construction meeting and the price of any tag-on unit adjusted accordingly.

(b) Term – Tag-on orders may be placed for a term of one year after the Effective Date of this Contract.

(c) Escalation - Manufacture reserves the right to adjust the price of any tag-on order if material costs escalate during the term of this Contract, changes in regulations become effective (for example EPA, NFPA or other), or the tag-on order would cross a model year.

(d) Acceptance – Manuracture holding the contract reserves the right to accept or reject any tag-on orders under this Contract.

SURCHARGE

Notwithstanding anything to the contrary in this Agreement, if the costs to Seller of acquiring any of the raw materials (including without limitation actual raw materials and/or conversion costs) used in the production and supply of the product(s) and/or goods (including, without limitation, the costs of acquiring raw materials, costs associated with tariffs, labor costs, shipping costs, or any other costs) materially increase from the cost levels as of the date of this Agreement, the parties agree that (1) Buyer shall have the obligation to pay and reimburse to Seller such increased costs, or (2) Seller shall have the right in its discretion to terminate this Agreement, without further liability, upon ten (10) days' notice to buyer. For purposes hereof, a "material increase" is defined to mean 5% of the quoted product and/or goods.

FINITE ELEMENT ANALYSIS AND TESTING

Finite Element Analysis (FEA) shall be provided by the manufacturer.

Prototype bodies have been subjected to rigorous testing over varied terrains simulating different environmental conditions.

The purpose of such complex engineering methods of analysis shall be to ensure the longevity of the design by analyzing stress levels throughout the body and incorporating the structural supports wherever necessary.

There shall have been a minimum of three (3) different load cases (per DOT, FHWA, and TTMA recommended practice) applied and analyzed to properly display the different areas and levels of stresses that will be present under the various operating conditions of the apparatus.

In addition to the FEA analysis, the core product design shall be strain gauged instrumental to ensure validation of FEA results and "Real World" drive/apparatus driving conditions.

Analysis shall also have been conducted on the mounting system for the apparatus body and pump house. EXCEPTIONS TO THIS STATEMENT MAY BE CAUSE FOR IMMEDIATE REJECTION AND/OR BE CONSIDERED NON-COMPLIANT.

SUPPLIED INFORMATION & EXTRAS

The apparatus manufacturer shall supply two (2) copies of apparatus manuals with all manufactured apparatus.

The manuals shall include, but not be limited to: all component warranties, users' manuals and information for supplied products, apparatus engineering information including drawings and build prints, and whatever other pertinent information the manufacturer can supply to its customer regarding the said apparatus.

Included in the delivery of the unit, the manufacturer shall also include spare hardware and extra fasteners, paint for touch-up, information regarding washing and care procedures, as well as other recommendations for care and upkeep of the general apparatus.

The manufacturer shall also supply a manufacturer's record of apparatus construction details, including the following information:

- Owner name and address
- Apparatus manufacturer, model, and serial number
- Chassis make, model, and serial number
- GAWR of front and rear axles
- Front tire size and total rated capacity in pounds
- Rear tire size and total rated capacity in pounds
- Chassis weight distribution in pounds with water (if applicable) and manufacturer mounted equipment (front and rear)
- Engine make, model, serial number, rated horsepower, and no load governed speed
- Type of fuel and fuel tank capacity
- Electrical system voltage and alternator output in amps
- Battery make and model, capacity in CCA
- Paint numbers
- Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall vehicle (with the water tank full (if applicable) but without personnel, equipment, and hose)
- Written load analysis and results of the electrical system performance tests
- Transmission make, model, and type
- The engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum no load governed speed

WARNING AND INFORMATION LABELS

All warning and informational labels (non-vendor specific) shall be provided in compliance with (NFPA) 1901, Standard for Automotive Fire Apparatus, and installed in the appropriate locations to alert the operator of potential hazards and operating instructions.

ON-LINE CUSTOMER INTERACTION

The manufacture shall provide the capability for online access through the manufacture's website. The customer shall be able to view digital photos of their apparatus in the specified phases of construction. The following phases will be captured and displayed on the manufacture's website:

1. Chassis when available at manufacturing facility
2. Body – Prior to Paint
3. Body – Painted
4. Assembly – 80% Complete

Due to the complex nature of fire apparatus and the importance of communication between the manufacture and customer, this line item is considered a critical requirement.

LIABILITY INSURANCE COVERAGE

In order to protect the department and its personnel, the bidder shall show proof that it has no less than $10 million in liability insurance in force. A certificate of coverage shall be included in the bid package. Failure to carry liability insurance of at least this amount or failure to include proof of coverage shall be cause to reject the bidder's proposal.

GENERAL WARRANTY

The manufacturer shall provide a two (2) year warranty from the date of delivery.

In the case of a commercial chassis being used, the warranty on the chassis, engine, transmission, tires, storage batteries, generators, electrical lamps and other devices subject to deterioration is limited to the warranty of the manufacturer thereof and adjustments for the same are to be made directly with the manufacturer by the customer.

STRUCTURAL BODY WARRANTY

A structural Aluminum body warranty shall be provided by the apparatus manufacturer for products of its manufacture to be free from defects in material and workmanship under normal use and service for a period of ten (10) years.

PAINT WARRANTY

A Prorated Paint Warranty shall be provided by the apparatus manufacturer for products of its manufacture to be free from defects in material and workmanship, under normal use and service, for a period of ten (10) years.

MULTI-PLEXED ELECTRICAL WARRANTY

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A four (4) year limited (V-MUX) multiplex system warranty, of Weldon Technologies, Inc.; shall be provided by the apparatus manufacture for parts and labor, while under normal use and service; against mechanical, electrical and physical defects from the date of installation.

The warranty shall exclude; sensors, shunt interface modules, serial or USB kits, transceivers, cameras, GPS, and electrical display screens, which shall be limited to a period of one a (1) year repair parts and labor from the date of installation.

FACTORY PRECONSTRUCTION CONFERENCE

The factory authorized Distributor shall be required, prior to manufacturing, to have a pre construction conference at the manufacturing facility with a factory representative present and individuals from the Riverside County Fire Department to finalize all construction details.

The factories authorized distributor shall, at his expense, provide transportation, lodging, and meals. Any distance greater than 200 miles shall be by commercial air travel.

FINAL INSPECTION CONFERENCE

The factory authorized Distributor shall be required, during manufacturing, to have a final completion inspection conference at the site of the manufacturing facility with One (1) individuals from the Riverside County Fire Department to inspect the apparatus after construction.

The factories authorized distributor shall, at his expense, provide transportation, lodging, and meals. Any distance greater than 200 miles shall be by commercial air travel.

LIABILITY INSURANCE COVERAGE

In order to protect the department and its personnel, the bidder shall show proof that it has no less than $10 million in liability insurance in force. A certificate of coverage shall be included in the bid package. Failure to carry liability insurance of at least this amount or failure to include proof of coverage shall be cause to reject the bidder's proposal.

OVERALL HEIGHT REQUIREMENT

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

OVERALL LENGTH REQUIREMENT

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

ANGLE OF APPROACH

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

ANGLE OF DEPARTURE

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

INTERNET IN-PROCESS SITE

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

RESPONSIBILITY OF PURCHASER

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

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

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

RESPONSIBILITY OF CONTRACTOR

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

7. Estimated In-Service Weight,
8. Wheelbase, Turning Clearance Radius,
9. Principal dimensions, Angle of Approach, Angle of Departure,
10. 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

ROLLOVER STABILITY

The apparatus shall meet the criteria defined below, or it shall be equipped with a stability control system defined below.

The apparatus shall meet the criteria defined in either of the following:

11) The apparatus shall remain stable to 26.5 degrees in both directions when tested on a tilt table in accordance with SAE J2180, *A Tilt Table Procedure for Measuring the Static Rollover Threshold for Heavy Trucks*.
12) The calculated or measured center of gravity (CG) shall be no higher than 80 percent of the rear axle track width.

Compliance shall be certified by testing, calculating, or measuring the apparatus or by comparing the apparatus to a compliant, substantially similar example apparatus and the certification shall be delivered with the fire apparatus.

The example apparatus shall be considered substantially similar if it includes a chassis with the same or higher CG height, the same or narrower rear axle track width, the same or greater water tank size and CG height, the same type of front and rear suspension and the same type and size of aerial device.

The apparatus shall be loaded with fuel, fire-fighting agents, hose, ladders, a weight of 250 lb in each seating position and weight equivalent to the Miscellaneous Equipment Allowance as defined in Table 12.1.2.

If the apparatus is designed to meet a specified higher equipment loading or larger hose bed capacity or to carry additional ground ladders, these greater loads shall be included in the testing, calculating or measuring.

The weight added to the fire apparatus for the purpose of test, calculation or measurement shall be distributed to approximate typical in-service use of the fire apparatus while not exceeding the manufacturer's published individual compartment weight ratings.

If the apparatus is equipped with a stability control system, the system shall have, at a minimum, a steering wheel position sensor, a vehicle yaw sensor, a lateral accelerometer and individual wheel brake controls.

FIRE APPARATUS PERFORMANCE

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

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

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

HIGHWAY PERFORMANCE

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

13) Accelerating from 0 to 35 mph (55 km/hr) within 25 seconds on a 0 percent grade
14) Attaining a speed of 50 mph (80 km/hr) on a 0 percent grade
15) 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:

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

a) Owner's name and address
b) Apparatus manufacturer, model, and serial number
c) Chassis make, model, and serial number
d) GAWR of front and rear axles and GVWR
e) Front tire size and total rated capacity in pounds (kilograms)
f) Rear tire size and total rated capacity in pounds (kilograms)
g) Chassis weight distribution in pounds (kilograms) with water and manufacturer-mounted equipment (front and rear)
h) Engine make, model, serial number, rated horsepower and related speed, and governed speed; and if so equipped, engine transmission PTO(s) make, model, and gear ratio
i) Type of fuel and fuel tank capacity
j) Electrical system voltage and alternator output in amps
k) Battery make, model, and capacity in cold cranking amps (CCA)
l) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
m) Ratios of all driving axles
n) Maximum governed road speed
o) Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), maximum discharge pressure capability rating, and serial number
p) Pump transmission make, model, serial number, and gear ratio
q) Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
r) Water tank certified capacity in gallons or liters
s) Foam tank (if provided) certified capacity in gallons (liters)
t) Aerial device type, rated vertical height in feet (meters), rated horizontal reach in feet (meters), and rated capacity in pounds (kilograms)
u) Paint manufacturer and paint number(s)
v) Company name and signature of responsible company representative
w) Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus (with the water tank full but without personnel, equipment, and hose)

2) Certification of compliance of the optical warning system *(see 13.8.16)*
3) Siren manufacturer's certification of the siren *(see 13.9.1.1)*
4) Written load analysis and results of the electrical system performance tests *(see 13.14.1 and Section 13.15)*
5) Certification of slip resistance of all stepping, standing, and walking surfaces *(see 15.7.4.5)*
6) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability *(see 16.2.4.1)*
7) If the apparatus is equipped with a fire pump and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions *(see 16.2.4.2)*

8) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications *(see 16.3.1)*
9) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed *(see 16.3.2.2)*
10) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test *(see 16.5.2.2)*
11) If the apparatus has a fire pump with a maximum discharge pressure capability rating that exceeds the hydrostatic test pressure of 16.5.2.1, the pump manufacturer's certification of the hydrodynamic test
12) If the apparatus has a fire pump, the certification of inspection and test for the fire pump *(see 16.13.1.1.5 or 16.13.1.2.4 as applicable)*
13) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test *(see Section 17.13)*
14) When the apparatus is equipped with a water tank, the certification of water tank capacity *(see Section 18.6)*
15) If the apparatus has an aerial device, the certification of inspection and test for the aerial device *(see Section 19.24)*
16) If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1911
17) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy *(see 20.10.4.2)* and the final installer's certification the foam proportioning system meets this standard *(see 20.11.2)*
18) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests *(see Section 21.9)*
19) If the apparatus has a line voltage power source, the certification of the test for the power source *(see 22.15.7.2)*
20) If the apparatus is equipped with an air system, air tank certificates *(see 24.5.1.2)*, the SCBA fill station certification *(see 24.9.6)*, and the results of the testing of the air system installation *(see 24.14.5 and 24.15.4)*
21) Any other required manufacturer test data or reports

OPERATIONS AND SERVICE DOCUMENTATION

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

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

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

22) Manufacturer's name and address
23) Country of manufacture
24) Source for service and technical information
25) Parts replacement information
26) Descriptions, specifications, and ratings of the chassis, pump (if applicable), and aerial device (if applicable)
27) 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
28) Lubrication charts
29) Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems
30) Precautions related to multiple configurations of aerial devices, if applicable
31) Instructions regarding the frequency and procedure for recommended maintenance

32) Overall apparatus operating instructions
33) Safety considerations
34) Limitations of use
35) Inspection procedures
36) Recommended service procedures
37) Troubleshooting guide
38) Apparatus body, chassis and other component manufacturer’s warranties
39) Special data required by this standard
40) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus

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

NFPA REQUIRED DOCUMENTATION FORMAT - USB FLASH DRIVE

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

FIRE APPARATUS SAFETY GUIDE

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

STATEMENTOF EXCEPTIONS

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

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

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

Riverside County Fire Department

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:

45. The chassis, body and tank(s)
46. Full fuel, lubricant, and other chassis or component fluid tanks or reservoirs
47. Full water and other agent tanks
48. *250 lb (114 kg) in each seating position
49. Fixed equipment such as pumps, aerial devices, generators, reels and air systems as installed
50. Ground ladders, suction hose, designed hose load in their hose beds and on their reels
51. An allowance for miscellaneous equipment that is the greatest of the following:
    a) The values shown for items 1 - 7
    b) A purchaser-provided list of equipment to be carried with weights
    c) A purchaser-specified miscellaneous equipment allowance

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

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

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

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

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

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

		(23,001 kg to 27,000 kg) GVWR		
		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:

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

UL 120/240 VAC CERTIFICATION

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

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

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

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

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

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

54) The power source output voltage, frequency and amperes
55) The prime mover's oil pressure, water temperature and transmission temperature, if applicable
56) The power source hydraulic fluid temperature, if applicable
57) The ambient temperature and power source air inlet temperature

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

1) Altitude
2) Barometric pressure
3) Relative humidity

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

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

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

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

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

DOCUMENTATION

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

DIELECTRIC VOLTAGE WITHSTAND TEST

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

The test shall be conducted as follows:

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 Riverside County Fire Department 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.

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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 five hundred ninety (590) days after pre-construction meeting and receipt and approval of any signed change orders from Riverside County Fire Department.

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 Riverside County Fire Department as to delays and to what extent these delays have in completing vehicle within the stated construction time period.
Dealer Commission

DELIVERY AND DEMONSTRATION

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

The Delivery Engineer shall set delivery and instruction schedule with the person appointed by Riverside County Fire Department.

After delivery of the apparatus, the Riverside County Fire Department shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment.
SPARTAN ER SUPPLIED CHASSIS

CAB TO AXLE DIMENSION

Cab to axle to center of rear tandems will be 190.5”.

FRONT BUMPER

The front bumper shall be 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.

SIREN SPEAKER

The siren speaker(s) shall be supplied and installed by the cab/chassis manufacturer.

AIR INTAKE SYSTEM

An air filter shall be provided in the engine's air intake system by the customer cab/chassis manufacturer.

Air inlet restrictions shall not exceed the engine manufacturer's recommendations.

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

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

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 DIVERTER

An exhaust diverter valve shall be located in-line of exhaust tubing and controlled from driver's position to re-route exhaust discharge. Exhaust diverter valve shall be constructed from 14 gauge stainless steel material with air actuated control.

As a default, the exhaust shall always discharge to curbside just ahead of rear wheels, and when selected the exhaust shall discharge to a vertical exhaust pipe, extending above the body height 12".

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.

- Exhaust Diverter shall be controlled by a momentary **locking** rocker switch with red actuator and red Indicatior. Rocker Switch wll be located in the center console/dash panel and shall be labeled "EXHAUST ON".

There shall be an Amber light next to the "DO NOT MOVE APPARATUS" that is a steady burn when diverter is active.

PLYMOVENT EXHAUST ADAPTER

A Plymovent 5" exhaust adapter flange for Plymovent pneumatic systems shall be provided and installed on the chassis engine exhaust tailpipe.

SVI Install of chassis Supplied Plymovent and Add a stopper plate at 3".

– The tail pipe(s) shall terminate parallel to rear axle and flush with body.

There shall be a Del Lava Wrap provided on the vertical exhaust.

ZONE A - FRONT WARNING LIGHTS, UPPER

The light bar shall be supplied and installed by the cab/chassis manufacturer.

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

GTT OPTICOM

A GTT Opticom model 792H Infrared LED emitter strobe style light with built-in power supply shall be provided as a stand alone unit (outside of light bar).

- Opticom shall be controlled by a virtual switch, labeled "OPTICOM", and interlocked with the parking brake (transmission park positon) same as other clear warning.

ZONE A - FRONT WARNING LIGHTS, LOWER

The warning lights shall be supplied and installed by the cab/chassis manufacturer. They shall be Whelen lights to complete an NFPA compliant lower level warning light system.

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

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

The warning lights shall be supplied and installed by the cab/chassis manufacturer. They shall be Whelen lights to complete an NFPA compliant lower level warning light system.

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

RADIO WIRING

All purchaser provided or vendor supplied radios, if specified shall be powered from the battery master switch, unless specified otherwise.

COMMUNICATION RADIO/ANTENNA INSTALLATION

There shall be one (1) mobile communication radio(s) with antenna installed in the cab. The location of radio shall be determined by the Riverside County Fire Department at the pre-construction meeting. All required radio programming shall be responsibility of Riverside County Fire Department. Radio(s) may not be fully tested if no radio program is provided with radio and will be responsibility of Riverside County Fire Department after delivery.

Radio shall be installed per Manufacturer's requirements and wired for proper 12 volt power and ground.
NOTE: Radio will be installed by Riverside, SVI providing faceplate.
SVI will install Chassis supplied AM/FM Radio antenna in the antenna rail.
Conduit with cable pull wire shall be installed from the Antanne Rail to C2 behind TV with fishing wire that the department will connect to their radios.

Riverside County Fire Department

Conduits will be added for the TV/ Interneet satellite gets installes, They will need torun down to the comm cabinet behind officer seat.

- Radio shall be provided by Riverside County Fire Department.
  Kenwood NX5700

RUMBLER PROGRAMMING

The cab/chassis supplied **Rumbler shall be programmed by SVI as follows:**
Rumbler Activation: The chassis supplied Rumblers will need to be linked with the siren head at SVI so that the Rumblers are active when the siren head is set to Wail or Yelp. They
shall then activate with the steering wheel activation
or the chassis supplied/installed siren button on the officer side.

SEVEN (7) POSITION ANTENNA RAIL

One (1) radio antenna rail(s) shall be provided and installed on roof of vehicle. Each rail shall be constructed of aluminum, forming a two piece box design. The top section shall be removable for easy access to the individual antenna wiring. Each base shall include enough cable to reach radio location plus a service loop of at least 10' of LMR195 flexible communications cable. The antenna wiring shall enter the vehicle roof at a single point under the end of the rail.

Antenna #1 mounted on specified antenna rail.

Due to multiple configurations of antenna whips, the Body Manufacturer shall provide the antenna base, and Riverside County Fire Department shall provide the whip.

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

Antenna #2 mounted and installed on specified antenna rail.

Due to multiple configurations of antenna whips, the Body Manufacturer shall provide the antenna base, and Riverside County Fire Department shall provide the whip.

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

Antenna #3 mounted and installed on specified antenna rail.

Due to multiple configurations of antenna whips, the Body Manufacturer shall provide the antenna base, and Riverside County Fire Department shall provide the whip.

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

Antenna #4 mounted and installed on specified antenna rail.

Due to multiple configurations of antenna whips, the Body Manufacturer shall provide the antenna base, and Riverside County Fire Department shall provide the whip.

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

Antenna #5 mounted and installed on specified antenna rail.

Due to multiple configurations of antenna whips, the Body Manufacturer shall provide the antenna base, and Riverside County Fire Department shall provide the whip.

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

Antenna #6 mounted and installed on specified antenna rail.

Due to multiple configurations of antenna whips, the Body Manufacturer shall provide the antenna base, and Riverside County Fire Department shall provide the whip.

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

Antenna #7 mounted and installed on specified antenna rail.

Due to multiple configurations of antenna whips, the Body Manufacturer shall provide the antenna base, and Riverside County Fire Department shall provide the whip.

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

Antenna rail will be painted to match the exterior color of the chassis.

Cab roof mounted antenna rail shall be located on forward upper roof section.

SEAT BELT COLOR

Section 14.1.3.3 of the NFPA 1901 Standards, requires all seat belt webbing in cab to be bright red or bright orange in color, and the buckle portion of the seat belt shall be mounted on a rigid or semi rigid stalk such that the buckle remains positioned in an accessible location.

SEAT BELT WEB LENGTH - CUSTOM CAB

Sections 14.1.3.2 and 14.1.3.3 of the NFPA 1901 standards, require the effective seat belt web length for a Type 1 lap belt for pelvic restraint to be a minimum of 60", and a Type 2 pelvic and upper torso restraint-style seat belt assembly to be a minimum of 110".

The chassis seat belt web length as supplied by the custom chassis manufacturer shall be compliant to NFPA Standards 14.1.3.2 and 14.1.3.3.

SEAT BELT / VDR SYSTEM - CUSTOM CAB

The seat belt warning and vehicle data recorder systems shall be provided by the cab/chassis manufacturer.

TIRE PRESSURE VISUAL INDICATORS

Tire pressure visual indicators if specified shall be supplied by the cab and chassis manufacturer.

SVI to install cab/chassis supplied Tire Pressure monitoring screen. Location for mounting will be determined at the mid-inspection.

HELMET STORAGE, CREW AREA

Riverside County Fire Department

No helmet storage is required in the cab crew 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.)

CAB INTERIOR COMPONENT PAINT COLOR, OEM SUPPLIED

Powder coat shall be hammertone **matte** black.

HUB AND NUT COVERS

If specified chassis supplied front and rear wheels hub caps and wheel nut covers shall be installed prior to delivery of completed unit.

MUDFLAPS

There shall be 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

The air brake quick build-up system shall be supplied from the cab/chassis manufacturer.

The quick buildup system shall provide sufficient air pressure so that the apparatus has no brake drag and is able to stop under the intended operating conditions following the 60-second buildup time.

CHASSIS AIR TANK VALVES

The cab/chassis air brake system tank drains shall be extended to Class 1 brass petcock valves with chrome plated zinc handle located on forward streetside lower body or as per tank locations. Each air tank and valve shall be inter-piped with black reinforced nylon tubing. Brass compression type fittings shall be used on the nylon tubing, meeting all DOT requirements.

Riverside County Fire Department

Each handle shall be properly labeled to identify each tank.

ROAD EMERGENCY SAFETY KIT

The DOT required reflective triangles, warning flares, and fire extinguisher shall be provided by cab and chassis supplier.

AUTOMATIC VEHICLE LEVELING SYSTEM

A Quadra Manufacturing, Inc. "Big Foot" model QEIIAM-26 shall be provided and installed on the completed vehicle designed for large heavy duty vehicles. The system shall have the following features;

- Simple, one touch operation for fully automatic leveling of the vehicle or trailer.**Will be near the driver on the dash.**
- Individual power units at each corner, which means nearly 4x the pump life compared to ordinary central pump systems due to each pump only running 25% of the time, less cycles = less wear & tear.
- All-Up safety feature signals if one or more of the cylinders are not fully retracted before you drive off.
- Manual adjustment feature that allows you to operate each cylinder individually.
- Four powder coated cylinders made at our facility capable of lifting 17,000 pounds each with 18” of stroke.
- Four weatherproof hydraulic power units, each with an American made marine pump & motor wrapped in a steel housing, allows the unit to be mounted outside in the elements so it does not take up storage space.
- 100 square inch "Bigfoot" pads for secure ground contact during operation.
- Emergency Retract operation.

The system shall be provided with Lifetime Cylinders, 2 Years Parts, 1 Year Labor limited warranty from Quadra Manufacturing, Inc.

SIGTRONICS INTERCOM SYSTEM

The following Sigtronics intercom system shall be provided and installed to improve the safety of firefighters and rescue professionals through enhanced communication and hearing protection. System shall have the following major components as minimum;

- Intercom Station, US-67D

MRIM-2 Mobile Radio Interface Module

- Connects between your mobile radio, a single headset, and push-to-talk (PTT) switch – or use it to connect a cellular telephone to your intercom system.
- Allows two-way radio communication via the Sigtronics emergency headset.
- Used in high noise applications where radio communication is required, but vehicle intercom is not.

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- All mounting hardware, jack box, switch box (PTT) and wire are included.
- Warranty: Two years parts and labor.

Switch Kit

MRIM-2 Switch kit (for 4 headsets) and BTCR-35M Interface.

Sigtronics Emergency Radio Switcher SRS-6

- The Emergency Radio Switcher allows AM / FM radio to be heard whenever intercom and / or mobile radio communications are not occurring.
- Our Radio Switcher is great for monitoring traffic and weather reports.
- AM / FM radio will not be heard over mobile radio, it will automatically be muted when communications occur.
- Warranty: Two years parts and labor.

- Radio interface for dual radio.

INTERCOM SYSTEM INSTALLATION

The above listed intercom system headset jascks shall be installed in the cab locations as follows;

- Driver's – Intercom & radio PTT provided at driver position.
  - Position provided with under helmet headset model **SE-8 RVC**
  - Headset shall be provided with radio PTT switch.
  - Intercom headset jack shall be located overhead right shoulder.
  - Push-to-Talk switch shall be located on center console/engine cover.
- Officer's – Intercom & radio PTT provided at officer position.
  - Position provided with under helmet headset model **SE-8 RVC**
  - Headset shall be provided with radio PTT switch.
  - Intercom headset jack shall be located overhead left shoulder.
  - Push-to-Talk switch shall be located on center console/engine cover.
  - Headset hook provided overhead left shoulder.

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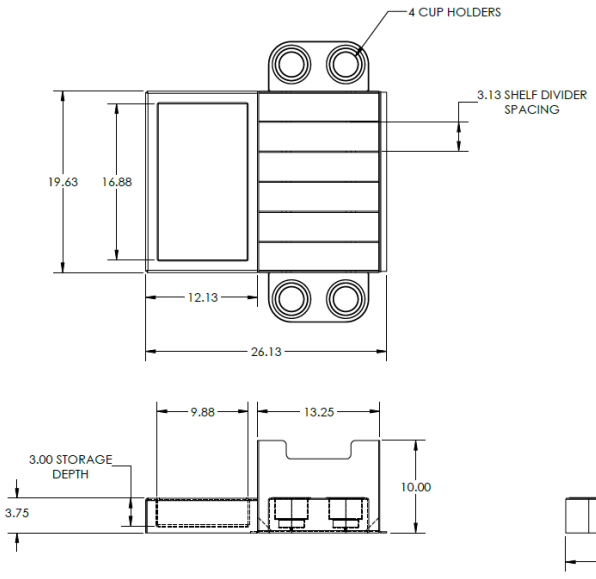
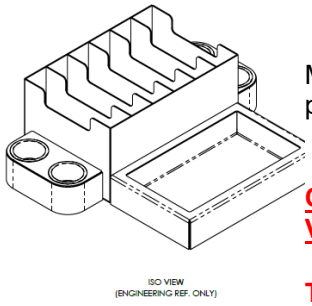
- Crew, Rear Facing – (1) Intercom & radio PTT provided at raer facing crew position.
  - Position provided with under helmet headset model **SE-8RVC**
  - Headset shall be provided with radio PTT switch.
  - Intercom headset jack shall be located on seat riser.
- Crew, Rear Facing – (1) Intercom & radio PTT provided at raer facing crew position.
  - Position provided with under helmet headset model SE-8RVC
  - Intercom headset jack shall be located on seat riser.
  - Headset hook provided on interior rear wall.
- Rear of Body – (1) Intercom & radio PTT provision(s) provided on rear of body streetside.
  - Position provided with under helmet headset model **SE-8RVC**
  - Intercom headset jack shall be located on **Rear Of Body.**
  - Headset hook provided on interior rear wall.

FRONT CAB INTERIOR COMPONENTS

MAP BOX

A map box shall be provided on engine cover of the cab between driver and officer. **Will match provided photo, Adding USB's and 12V plugs to each side of mapbox.**





Map box shall be provided with open top.

CHASSIS SUPPLIED VISTA

There shall be a vista screen shipped loose from chassis manufacture for SVI to install in the rear body area on curbside.

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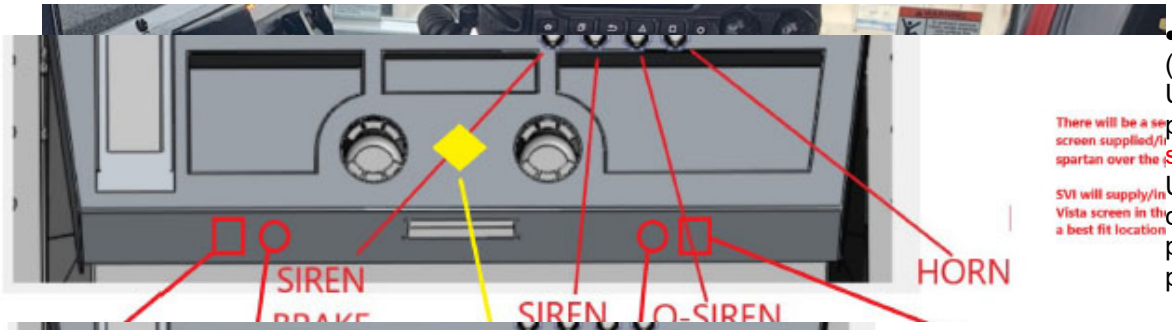
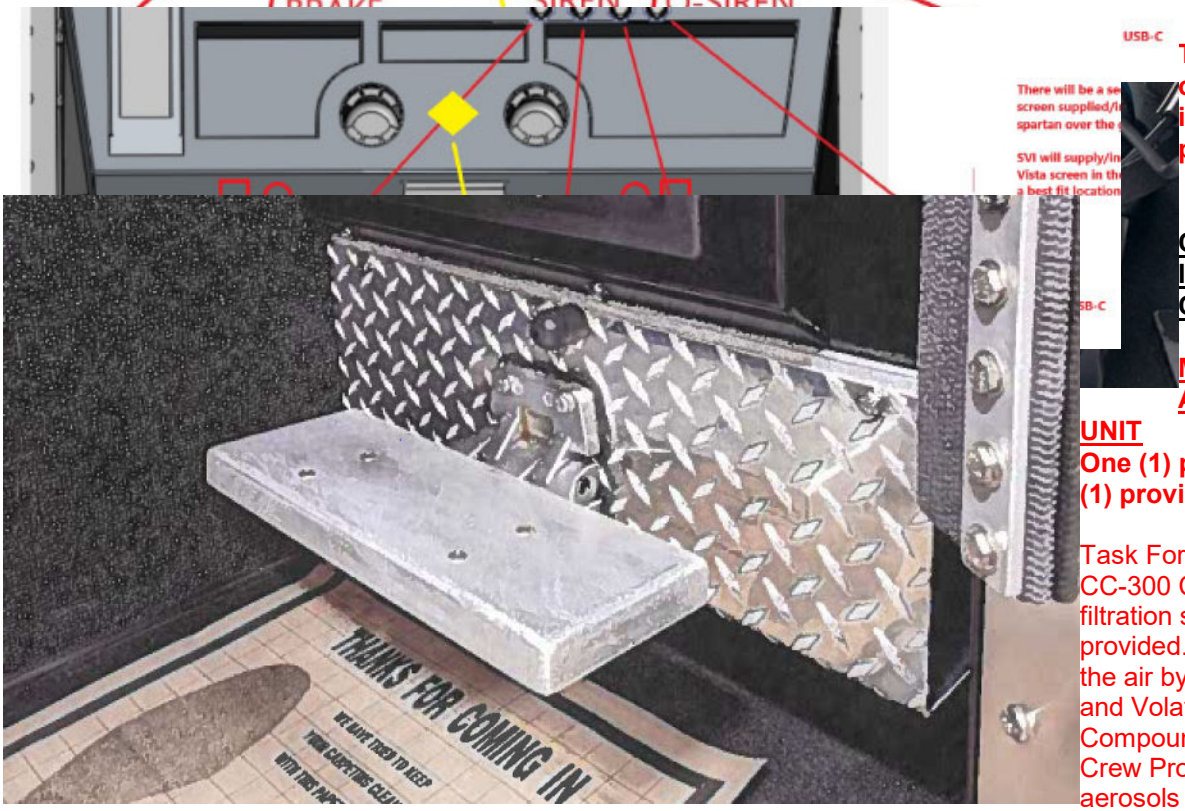
- There shall be two (2) 12 VDC power plug(s) provided in dash as shown below..



- There shall be one (1) Blue Sea 12 VDC USB dual port(s) provided in dash as shown below. Dual USB charging ports come with one USB-C port and one USB-A port.



There will/ shall be a officerside foot step install as shown in provided picture.

CREW CAB INTERIOR COMPONENTS

MULTI-THREAT CAB AIR FILTRATION UNIT

One (1) provided in cab, one (1) provided in lab.

Task Force Tips model # CC-300 CrewProtect air filtration system shall be provided. The unit shall purify the air by reducing particulates and Volatile Organic Compounds (VOCs). The Crew Protect shall also reduce aerosols carrying viruses and bacteria by over 99%.

The unit shall be mounted on the rear of the engine tunnel using the provided mounting brackets. The system shall run whenever the apparatus is operating. The unit shall have an air flow rate of 100 CFM (2832 cubic l/min) and operates at no more than 60.2 decibels, below the NFPA maximum of 90 decibels. The unit shall exchange the air every 3-1/2 minutes in an average apparatus cab of 350 cubic feet (9911 cubic liters).

The unit shall be in a protective steel case that is powder coated charcoal grey inside and out. The unit shall be 20” long, 12” wide and 4-1/2” tall (508 x 305 x 115 mm).

A single replacement filter element # CC-305 uses RFID technology to assure correct replacement filters are installed. Unit will not operate unless correct RFID filter is installed to provide protection for the crew. The current condition of the filter is tracked by three LED lights, green, amber, and red, on the prominent face of the unit.

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The unit shall have a unique serial number and be covered by a three-year warranty.

Shall activate with Ignition and V-MUX

REAR CAB COMPONENT LAYOUT

The following components shall be provided in the rear area of cab, final layout to be determined at pre-construction meeting.

Located on floor rear facing center position shall be;

REAR CAB DESK - "L" SHAPED

The rear portion of cab shall be provided with an "L" shaped desk extending from the curbside to streetside and extending on the streetside.

The full width section shall be approximately 26" deep and located 30" from the floor. The streetside extension shall be approximately 18" deep and located 30" from the floor.

The desk top surface shall be fabricated of 3/16" smooth finish aluminum.There shall be 2-1/2" diameter holes with plastic edge grommets provided at each rear corner for wiring of future equipment located on the desk top.

DESKTOP COMPONENT CONSOLE

There shall be a one (1) console(s) at top rear of the desk for optional component mounting. The console(s) shall be fabricated from 1/8" aluminum approximately 6" high x 9" deep with a 6" sloping component mounting face.

The sloped component mounting surface shall be a one-piece cover to allow access to optional components, and wiring and held closed with fastener in each corner.

- There shall be two (2) communications radio and/or siren 3" recess mount(s) with black powdercoat paint finish in specified console.
- There shall be four (4) CAT 6 data port(s) provided in specified console and connected to on-board computer network.
- There shall be one (1) 12 VDC power plug(s) provided in specified console.
- There shall be two (2) 120 VAC, 20 amp, duplex straight-blade receptacle (NEMA 5-20R) outlet(s) provided in specified console.
  - Outlet(s) shall be powered by both the on-board generator and specified inverter (confirm inverter is auto switching capable).
- There shall be two (2) Blue Sea 12 VDC USB dual port(s) provided in specified console.
  Note: this is to be 1-USBA, and 1- USBC

MAP LIGHT

There shall be one (1) 19" goose neck 12 volt map light(s) furnished and installed on the back edge of the desk top and or

desk top console.

INTERIOR PEDESTAL SEAT, 2-POINT

One (1) Bostrom Sierra high back reclining pedestal type seat(s) shall be provided. Seat(s) shall have swivel pedestal base with 5" fore/aft adjustment. Seat(s) shall be securely mounted to the reinforced floor structure.

The seat(s) shall be provided with a 2-point type automotive lap seat belt and shall be red in color. The seat belt(s) shall be attached to points provided on seat as well as a pair of tethered straps from seat to floor structure.

The Bostrom seat(s) shall include a covering of extra high strength, wear resistant fabric made of durable Durawear Plus™ ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. The material meets FMVSS 302 flammability requirements. Seats material color shall closely match the cab chassis supplied seat colors.

Each seat shall be wired to the on-board seat belt indicator, and Vehicle Data Recorder (VDR) systems per NFPA 1901.

Note: This seat should be towards the driverside. Seat must be able to move/adjust in/out with seat at the left desk.

Located at ceiling rear facing center position shall be;

Located on floor rear facing driver position shall be;

Located at ceiling curbside facing driver position shall be;

CAB INTERIOR CABINET - OVERHEAD

There shall be two (2) overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum. Each cabinet shall be approximately 40" wide x **16**" high x 14" deep, length to best fit the designated area. If cab is specified with air bags, the interior cabinet(s) will be mounted clear of the deployment area.

The above cabinet(s) shall have lift-up type door(s) framed from 80/20 Inc. aluminum extrusions, rounded corners, and gas piston type door stays. The door shall have a dry-erase outer surface, **that are magnetic.**

Cabinet door to be held closed with gas piston.

- The compartment light(s) shall be controlled by a switch actuated by the compartment door.
- 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 specified inverter (confirm inverter is auto switching capable).
  - The outlet shall be located on rear wall, upper left area.
- There shall be two (2) OnScene Solutions 10" Access PRO LED light(s) mounted inside the cabinet.

Located on floor rear facing officer position shall be;

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Located at ceiling rear facing officer position shall be;

There shall be one (1) full height cabinet located in rear cab area. The cabinet shall be fabricated from 1/8" smooth aluminum.The cabinet shall have one permanent horizontal divider to create an upper and lower storage area.

The cabinet shall be finished with a dark gray hammer tone powder coat paint for a hard and durable finish. The cabinet shall be approximately 23" wide x cab interior height (less 3") x 21" deep. If cab is specified with air bags, the interior cabinet(s) will be mounted clear of the deployment area.

This cabinet will be housing the data rack.

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

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

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

- Each cabinet shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.

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.

one (1) wired battery direct, one (1) wired to ignition.

- 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.

- 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.

Located on floor forward facing center position shall be;

- Chassis specified seating position.

Located on floor forward facing officer position shall be;

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

The cabinet shall be approximately **24**" wide x**35**" high x **24**" deep. If cab is specified with air bags, the interior cabinet(s) will be mounted clear of the deployment area.

- Cargo netting of 1" - 2" nylon webbing shall be provided over cabinet opening with automotive seatbelt style latches.

- The compartment light(s) shall be controlled by a latching, black rocker switch with amber indicator light. The switch shall be labeled as "COMPARTMENT LIGHTS" with a black and chrome label bezel.
- There shall be one (1) OnScene Solutions 28" Access PRO LED light(s) mounted inside the cabinet.
- Cabinet(s) shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
- There shall be two (2) adjustable shelf/shelves in the above cabinet(s). Each shelf shall have a 1.25" vertical lip at front to contain items while vehicle is in motion.

Located at ceiling forward facing officer position shall be;

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

The cabinet shall be approximately 24" wide x 35" high x 24" deep. If cab is specified with air bags, the interior cabinet(s) will be mounted clear of the deployment area.

This cabinet opening will be facing the streetside rather than forward facing.

- Cargo netting of 1" - 2" nylon webbing shall be provided over cabinet opening with automotive seatbelt style latches.

- The compartment light(s) shall be controlled by a latching, black rocker switch with amber indicator light. The switch shall be labeled as "COMPARTMENT LIGHTS" with a black and chrome label bezel.
- There shall be one (1) OnScene Solutions 28" Access PRO LED light(s) mounted inside the cabinet.
- Cabinet(s) shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
- There shall be two (2) adjustable shelf/shelves in the above cabinet(s). Each shelf shall have a 1.25" vertical lip at front to contain items while vehicle is in motion.

CAB MISCELLANEOUS EQUIPMENT

The following items shall be provided in cab as follows;

PRINTER/COPIER/SCAN/FAX

One (1) HP OfficeJet 6600e (or equal) All-In-One printer/copier/scan/fax with built-in wireless wifi shall be provided in rear cab command area, location per Riverside County Fire Department. Unit shall be 18.5" W x10" H x 17.6" D, and weigh 17 lbs.

Unit shall be complete and fully operational, including all required cabling, 120 volt AC wiring, and cable connections. All paperwork and software provided with purchased unit shall be provided in a plastic sleeve attached to unit when delivered.

Location for Printer will be determined at the mid inspection.
(Printer will also be the most current model/ version)

- The above air conditioner(s) shall be powered by gen/shore with auto relays.

SHORE POWER INLET

The 30A auto ejecting Inlet shall be cab/chassis supplied. Body builder to add use and load labeling.

- Auto eject inlet cover color shall be yellow.

STREETSIDE FUEL FILL

There shall be one (1) fuel fill door located in the streetside exterior wheel well panel, behind the rear axle. The fill door shall be fabricated from brushed stainless steel. There shall be a permanent label with the text "DIESEL FUEL ONLY" located adjacent to the fuel fill access.

CURBSIDE FUEL FILL

There shall be one (1) fuel fill door located in the curbside exterior wheel well panel, behind the rear axle. The fill door shall be fabricated from brushed stainless steel. There shall be a permanent label with the text "DIESEL FUEL ONLY" located adjacent to the fuel fill access.

DEF FLUID FILL

The DEF fluid fill shall be as supplied by commercial cab/chassis manufacturer.
== SVI Front Walk-in Rescue (FWI) - 2022.100 04/15/21 ==

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 Riverside County Fire Department 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 Riverside County Fire Department 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.

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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.

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, shall not be an acceptable method of compartment construction.

The compartments shall be an integral part of the body construction. Compartment floors from front of body to ahead of rear axle, also from rear axle to rear of body shall be single one-piece sections. Compartment floors shall be preformed, then positioned in body and welded into final position.

Compartment floors shall have a "sweep-out" design with door opening threshold positioned lower than compartment floor, permitting easy cleaning of compartments. Angles, lips, or door moldings are not acceptable in the base of compartment door opening. One-way rubber drain valves shall be provided in compartment floors so that a water hose may be used to flush-out compartment area.

All 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, sheet metal screws and/or aluminum screws shall be used in mounting exterior trim, hardware and equipment.

Exterior compartments shall have louvers in lower back wall of compartment for ventilation.

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 NFPA compliant non-skid tread plate and welded to roof structure and body sheet metal. All seams in roof material shall be fully and continuously welded to prevent 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 utilizing two (2) 3/4" diameter x 6" long grade 8 bolts and two (2) heavy duty springs. The assembly design shall allow the body and subframe to act as one (1) component, separate from the chassis. As the chassis frame twists under driving conditions, the spring mounting system shall eliminate any stress from being transferred into the body. The spring loaded body mounts shall also prevent frame side rail or body damage caused by unevenly distributed stress and strains due to load and chassis movement.

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

10" REAR STEP BUMPER

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

REAR TOW EYES

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

GROUND LIGHTS

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There shall be two (2) OnScene 8" Access white LED lights installed below bumper capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

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

WHEEL WELL EXTERIOR PANEL

The exterior panel of the body wheel well enclosure shall be constructed from 3/16" smooth aluminum panels.

STAINLESS STEEL BODY FENDERETTES

The body wheel well openings shall be provided with round radius, polished stainless steel fenderettes. The fenderettes shall be bolted and easily replaceable if damaged. The fenderettes shall be installed using nylon washers to space them slightly away from the body to reduce buildup of moisture and/or debris.

WHEEL WELL LINERS

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

SCBA CYLINDER COMPARTMENTS

There shall be four (4) SCBA cylinder storage compartments located, two (2) on each side of body in the rear wheel well area **housing a total of five (5) SCBA on each side for a toal of ten (10).**
(See 2D Drawing)
Each compartment shall be capable of storing two (2) SCBA (60 min.) cylinders. Each compartment shall have a vertically hinged aluminum door with 14ga stainless steel hinge, a positive catch latch and painted primary lower body color. Each compartment shall allow the storage of an SCBA cylinder or a fire extinguisher up to 7-3/4" in diameter x 24" deep. The door shall activate the "Hazard Warning Light" in the cab when not in the closed position.

***These compartment doors will have Southco large polished stainless slam latches (part # M1-25-61-18) ILO specified push latches.**

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 Riverside County Fire Department approved paint spray out provided.

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 Riverside County Fire Department prior to installation. The graphics proof shall be submitted to Riverside County Fire Department 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.

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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.

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.

CHEVRON STRIPE - CAB BUMPER

A reflective stripe shall be affixed to the front of cab. The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width.

The approximate 10" wide Chevron retroreflective stripe shall be affixed to at least 25 percent of the width of the front of the apparatus 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. Chevron panels shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use. Chevron panels shall have a minimum 10 year warranty for material failure, and colorfastness.

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

All retroreflective materials required shall conform to the requirements of ASTM D 4956, *Standard Specification for Retroreflective Sheeting for Traffic Control*, Section 6.1.1 for Type I Sheeting.

- This reflective stripe shall be white in color.

REFLECTIVE STRIPE - CAB DOOR INTERIOR

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

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

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.

The stripe shall extend straight from front of cab, then ahead of the rear wheels, it shall form an "S" shape and extend straight back to the rear of the body. The "S" portion of the stripe shall have a black shading in the corners.

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 height up to side compartment drip rail 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.

LETTERING

GRAPHICS PROOF

A color graphics proof of the lettering layout shall be provided for approval by Riverside County Fire Department prior to installation. The graphics proof shall be submitted to Riverside County Fire Department 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

REAR BODY LETTERING

FRONT OF CAB LETTERING

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.

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

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

BODY HEIGHT MEASUREMENTS

The vertical body dimensions shall be as follows:

AHEAD OF REAR AXLE

	Description	Dimension
A	Bottom of Subframe to Top of Body	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:	
	-with roll-up door	65.0"
	-with hinged door	68.5"

ABOVE REAR AXLE

	Description	Dimension
G	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	34.0"
	-with hinged door	37.5"

BEHIND REAR AXLE

	Description	Dimension
H	Bottom of Subframe to Bottom of Body	20.0"
I	Compartment Height Above Frame	48.0"
J	Compartment Height Below Frame	22.5"
K	Vertical Door Opening:	
	-with roll-up door	62.0"
	-with hinged door	65.5"

GENERAL

	Description	Dimension
L	Top of Body to Bottom of Drip Rail	38.5"

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

FIVE (5) UPPER BODY COMPARTMENTS (OPEN)

The forward transverse compartment shall be 90.0" long x 27.0" wide x 33.5" deep. There shall be four (4) compartments parallel to the sides of the body, two (2) on each side. Each of these compartments shall be approximately 74" long x 28.0" wide x 33.5" deep. The side compartments shall be open under each door sill to allow for long equipment. Each compartment shall be integral with the body construction, and will not be bolted or add-on modules. The outside walls of each compartment will be double walled to prevent equipment from denting the outside painted surface.

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Each compartment shall have a lift-up type compartment door hinged on the outboard side. Each door shall be fabricated from 3/16" aluminum tread plate. Each door shall have two (2) pneumatic type cylinders, one (1) at each end, attached to cast aluminum brackets mounted to the interior surface of the door to hold the door in both the opened and closed positions. Each door shall be mounted using multiple 16" long, equally spaced, 14 gauge stainless steel hinges, with 1/4" stainless steel pin. A polyester barrier film gasket shall be placed between stainless steel hinge and the body mounting surface as necessary to resist corrosion caused by dissimilar metals.

Each compartment door shall overlap a 2" vertical lip on the body roof to resist entry of moisture and sealed with automotive type rubber molding to provide a weather resistant seal.

Each roof compartment door shall have a chrome 7" handle bolted to center of each door.

Each compartment shall have a 13/16" drain hole located in floor of compartment with a 1" flexible drain tube that terminates below body.

Each compartment shall have a horizontally mounted OnScene Solutions LED light on the underside of the door. The light and NFPA door ajar system shall be automatically activated by an individual switch per compartment.

The forward/transverse compartment lid may be raised, if needed, to allow for necessary clearance for the Onan diesel generator located within.

NOTE: Lab Filter will be located in teh forward transverse compartment on the curbside.

UPPER BODY WALKWAY

A 34" wide, upper body walkway shall be provided at the center of body and recessed into the roof structure. The walkway shall be fabricated from NFPA compliant 3/16" aluminum tread plate with continuously welded cross seams to resist moisture penetration into apparatus body, No Exceptions. The walkway shall be supported with 2" x 2" tubing on 14" - 22" centers.

13/16" drains shall be installed at front of walkway connected to 1" flexible drain tubes that will terminate below the body.

WALKWAY/STEP LIGHTS

There shall be four (4) 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.

ROOF ACCESS LADDER

An Alco-Lite FSR-08 sliding storage type ladder shall be provided at the rear of the body to access the upper recessed walkway. The stair ladder shall be provided with handrails and non-slip step surfaces. The ladder shall be stored in the recessed walkway when not in use and slide out and drop down to ground level. In the extended position the ladder shall contact the ground. The truck must be parked on a flat stable surface for the ladder to have a secure footing to the ground.

The ladder rails shall be constructed of aluminum extrusions. The steps shall be constructed of an aggressive non-slip aluminum step surface. Handrails constructed of aluminum shall be provided to assist with climbing. Handrails shall fold down for ease of storage.

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The deployed ladder shall be connected to the "do not move truck" light in the cab, which shall activate with the release of the parking brake. The stair ladder shall be approximately 144" long x 24" wide. The steps shall be 8" deep.

A hinged lever shall be provided so that the roof access stair ladder can be retracted easily. The lever shall be designed to lift the ladder out of its stowed position by pulling on the lever while standing on the rear tailboard.

The lower sides of ladder from ground up to 36" height shall have white reflective striping added.

There shall be Red/White conspicuity tape to the outside of the staircase to see when deployed.

BODY WIDTH DIMENSIONS

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

Area Description	Dimension	
Transverse above subframe:	95.0"	(If specified.)
Compartment depth above subframe:	31.0"	(To walkway wall, if specified.)
Compartment depth below subframe:	24.5"	
Walkway width:	34"	(If specified.)

STREETSIDE COMPARTMENT - FRONT (S1)

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 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.

Will be keyed 1250

- 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.

COMPARTMENT LAYOUT

- 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.
- The inverter.
- The controls for the specified light tower(s).
  (Standard location in S1 by the 12V panel)
- The 12 volt electrical distribution panel shall be located in the front lower compartment.

STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S2)

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 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.

Will be keyed 1250

- 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.

COMPARTMENT LAYOUT

- 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.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S3)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.

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- The compartment door opening shall be approximately 47.3" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

Will be keyed 1250

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- 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 83 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be full width (street/curb) and as wide as the compartment layout or door opening permits, capable of extending out either side of the body located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed, 40% extended and 70% extended positions.
- Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
  - The above component(s) shall have a smooth un-painted finish.

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

- This reflective stripe shall be red/white in color.
- There shall be one (1) 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 46" 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 surface with an internal depth of approximately 3 ½".
  - The above component(s) shall have a smooth un-painted finish.

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

- This reflective stripe shall be red/white in color.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S4)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 47.3" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

Will be keyed 1250

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- 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 83 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be full width (street/curb) and as wide as the compartment layout or door opening permits, capable of extending out either side of the body located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed, 40% extended and 70% extended positions.
- Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
  - The above component(s) shall have a smooth un-painted finish.

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

- This reflective stripe shall be red/white in color.
- There shall be one (1) 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 46" 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 surface with an internal depth of approximately 3 ½".
  - The above component(s) shall have a smooth un-painted finish.

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

- This reflective stripe shall be red/white in color.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

STREETSIDE COMPARTMENT - REAR (S5)

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

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 61.3" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

Will be keyed 1250

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- 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.

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- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
  - Any equipment mounting on slide tray shall be provided by Riverside County Fire Department after delivery.
  - The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) OnScene Solutions 83 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be full width (street/curb) and as wide as the compartment layout or door opening permits, capable of extending out either side of the body located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed, 40% extended and 70% extended positions.
- Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½”.
  - The above component(s) shall have a smooth un-painted finish.
- 3M™ Diamond Grade™ 2" wide conspicuity striping shall be provided on the front and side faces of the tray.
- This reflective stripe shall be red/white in color.
- There shall be one (1) 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 47" 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 surface with an internal depth of approximately 3 ½”.
  - The above component(s) shall have a smooth un-painted finish.
- 3M™ Diamond Grade™ 2" wide conspicuity striping shall be provided on the front and side faces of the tray.
- This reflective stripe shall be red/white in color.
- There shall be one (1) slide-out smooth aluminum vertical tool board(s) approximately 30" deep. Each tool board(s) vertical exterior edge shall have a double 90 degree formed edge to provide an easy grip handle. The top and bottom of tool board(s) shall be provided with Accuride 9300 series slide tracks. Each board shall be rated for a maximum 200 lbs. evenly distributed load. Each tool board shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions.
  - The vertical tool board material shall be 3/16" (.188) 3003H-14 aluminum alloy sheet.

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- The above component(s) shall have a smooth un-painted finish.
  - Each tool board will be bolted to compartment floor.
- 3M™ Diamond Grade™ Conspicuity striping shall be provided on both sides of the tool board. The striping shall be 2" wide and red/white in color.

- There shall be one (1) 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 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.
- There shall be two (2) Zico 1000 series KD-UH walkaway type SCBA air pack bracket(s) with high cycle coated spring clips and short foot plate.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- One (1) Hannay ECR1618-17-18 electric cable reel(s) capable of storing 200' of 10/3 electric cable. Reel(s) shall be designed to hold 110% of the capacity of cord length, with fully enclosed 45 amp, three (3) conductor collector rings. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position.
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
  - A label shall be provided in a visible location adjacent to reel with following information: Current rating, Current type, Phase, Voltage, and Total cord length.

  This reel will actually be mounted in the upper body compartment towards the rear of the upper street side compartment, with the fairlead accessable in S5 compartment. (See 2D drawing).

  - The cable reel shall equipped with 200' of 10/3 SEOW black cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.
- One (1) Akron model EJBX series, cast aluminum electrical power distribution box with gray powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1901. The power distribution box shall include the following outlets mounted on a backlit face plate;
  - A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:
  - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
  - One (1) 120 VAC, 5-20 duplex straight-blade receptacle
  - One (1) 120 VAC, L5-20 single twist lock receptacle.

  - One (1) 120 VAC, L5-20 single twist lock 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 Riverside County Fire Department.
- The fairlead roller shall be mounted directly to the reel.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.
- There shall be one (1) underbody slide-out step. Step surface shall be constructed from 9" deep DiamondBack non-slip vented aluminum stair treads mounted to underbody using Delron plastic slides for corrosion resistance. Step slide shall be securely held in both out and stored position, utilizing a heavy duty pneumatic cylinder designed to have an over center location which will assist the step in both extension and retraction. Each step shall be designed to hold 500 lbs.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

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.

Will be keyed 1250

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.

- One (1) OnScene 8" Access 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.

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ENTRY HANDRAILS

There shall be two (2) handrails provided at entry door; one (1) Hansen International 24" x 1-1/8" vertical handrail on exterior of body on door handle side, and one (1) Hansen International 30" x 1-1/8" 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 formed from anodized aluminum with knurled anti-slip finish.

Each handrail shall be back-lit with a Safetylite, 12 VDC white LED light tube. Lights shall be activated with headlight and park brake set circuits.

A safety sign FAMA23, which warns of the proper climbing method, shall be visible to personnel entering the cab and at each designated climbing location on the body.

A safety sign FAMA24, which warns personnel not to ride on the vehicle, shall be located at the rear step areas and at any cross walkways.

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 Diamond Grade series graphic film.

- This reflective stripe color shall be **Red/ Flouresent Yellow-Green**.

CURBSIDE COMPARTMENT - AHEAD OF REAR WHEEL (C2)

CURBSIDE COMPARTMENT - AHEAD OF REAR WHEEL (C2)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 47.3" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

Will be keyed 1250

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

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COMPARTMENT LAYOUT

- 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. Each tray shall be vertically adjustable. Each tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.

This tray will be in the lower C2 compartment, and will have the Lab encloser on it as shown in drawing. Also there will need to be flexible ducting to allow the tray to be pulled out.

  - Any equipment mounting on slide tray shall be provided by Riverside County Fire Department after delivery.

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

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

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

INTERIOR LAB CONTAINMENT ENCLOSURE

A Flow Sciences, Inc. model FS2010FD Containment Enclosure with alarm shall be provided in lab area of walk-in. Unit shall be made with a GP grade clear acrylic walls and a black phenolic resin dished base to contain liquid spills. Unit shall be approximately 24" wide x 20" high x 29" deep (to back of stack plenum). The completed system shall include a FS2063VK vent kit, FS4010 fan housing, and a FS4060 BagOut HEPA filtration system. Unit shall be installed to Flow Sciences, Inc. requirements, and tested prior to delivery to Riverside County Fire Department. (No Exceptions)

The unit shall be located on the top of the stainless steel countertop of the work lab area. The system shall be exhausted to the exterior of the unit through the roof.

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

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

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

- Power port shall be wired battery direct.

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

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

- There shall be a double-gang box to hold up to two (2) duplex outlets per box installed.

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

- The outlet shall be located on rearward wall, upper left area.
- 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 specified inverter (confirm inverter is auto switching capable).

One of the four (4) needs to be Inverter powered.

- The outlet shall be located on forward wall, upper left area.

CURBSIDE COMPARTMENT - AHEAD OF REAR WHEELS (C3)

The interior useable compartment width shall be **approximately 36.0" wide.**

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 28.5" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

Will be keyed 1250

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

LOW PRESSURE AIR OUTLET

There shall be one (1) Milton female quick connector type air outlet connection(s) to supply low pressure air for general maintenance. The outlet shall terminate in a 1/4" NPT threaded port with a Milton female type adapter. Air outlet shall be located near driver's door. The male end of the connector shall be supplied by the Riverside County Fire Department.

This air outlet will be located above the Lista Tool Box, and will terminate female standard air chuck.

- 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.

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- There shall be two (2) adjustable shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.
  - Any equipment mounting on adjustable shelf shall be provided by Riverside County Fire Department after delivery.
  - The above component(s) shall have a smooth un-painted finish.
  - 3M™ Diamond Grade™ Conspicuity striping shall be provided on the front face of the shelf(s).
- This reflective stripe shall be red/white in color.
  - There shall have **Pac Trac on the 12"D part of the back wall top to bottom, as shown in 2D drawing**.
- One (1) Lista drawer cabinet, model NS**750-RG-IDL-LG** shall be provided in compartment. The Lista cabinet shall be x 16-7/8" wide x 33.50" high x 22-1/2" deep. Cabinet shall have four (4) individual drawers as follows; one (1) 5.1", one (1) 5.1", one (1) 8", and one (1) 8". Light Gray in color.

Each cabinet shall be provided with a individual lock (RG) and two (2) keys.

Each cabinet drawer shall be provided with a individual latch (IDL).

The cabinet shall be Light Gray in color.

- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C3)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 47.3" wide.
- The interior door panel shall have a smooth un-painted aluminum panel.
- The hinged door(s) shall have a stainless steel 6" offset bent D-ring locking handle. A gasket shall be placed between handle and door. Door latches shall be a two-point rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

Will be keyed 1250

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.

- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- 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 83 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 94" deep; capable of extending out either side of the body located above the level of the chassis frame rails. (Specified in opposite side compartment.)

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

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

- There shall be one (1) 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 46" 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 surface with an internal depth of approximately 3 ½".

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

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

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

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

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C4)

The interior useable compartment width shall be approximately 56.5" wide.

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.

- The compartment door opening shall be approximately 47.3" wide.

- The interior door panel shall have a smooth un-painted aluminum panel.

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

Will be keyed 1250

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- 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 83 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 94" deep; capable of extending out either side of the body located above the level of the chassis frame rails. (Specified in opposite side compartment.)

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

- This reflective stripe shall be red/white in color.
- There shall be one (1) 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 46" 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 surface with an internal depth of approximately 3 ½”.

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

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

- This reflective stripe shall be red/white in color.
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.

CURBSIDE COMPARTMENT - BEHIND REAR AXLE (C5)

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

- This compartment shall have flush fitting vertically hinged compartment door. The door exterior shall be painted job color.
- The compartment door opening shall be approximately 61.3" wide.

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

Will be keyed 1250

- The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the compartment door header and the box pan of the door.
- The door ajar switch shall be provided with specified hinged door and pneumatic cylinder switch assembly to activate compartment lighting and door ajar signal in cab when door is opened.
- Compartment threshold protection shall be provided on the bottom edge of the compartment door sill. The threshold protection shall be fabricated from brushed 304 stainless steel sheet metal.

COMPARTMENT LAYOUT

- 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 three (3) 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 surface 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 Riverside County Fire Department after delivery.

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

- This reflective stripe shall be red/white in color.
- There shall be one (1) OnScene Solutions 83 series aluminum tray base with 70% extension, and rating of 1,000 lbs. Slide-out tray(s) base shall be approximately 94" deep; capable of extending out either side of the body located above the level of the chassis frame rails. (Specified in opposite side compartment.)

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

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

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- 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 45" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. 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 surface with an internal depth of approximately 3 ½".
  - The above component(s) shall have a smooth un-painted finish.

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

- This reflective stripe shall be red/white in color.
- There shall be two (2) vertical compartment partition(s) provided dividing the compartment into fore and aft sides. The vertical partition(s) shall be 3/16" (.188) 3003H-14 alloy smooth aluminum sheet. Partition shall be approximately 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.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- Two (2) OnScene Access PRO white LED, full height compartment lights, vertically mounted.
- There shall be one (1) underbody slide-out step. Step surface shall be constructed from 9" deep DiamondBack non-slip vented aluminum stair treads mounted to underbody using Delron plastic slides for corrosion resistance. Step slide shall be securely held in both out and stored position, utilizing a heavy duty pneumatic cylinder designed to have an over center location which will assist the step in both extension and retraction. Each step shall be designed to hold 500 lbs.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

ROOF ACCESS STAIRWAY

The rear of the body shall be provided with a recessed center stairway in lieu of a compartment.

BODY OPTIONS AND UPGRADES

PLASTIC FLOOR AND SHELF TILE

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

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

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REAR BODY HANDRAIL

There shall be one (1) Hansen International 24" x 1-1/8" vertical handrail on **curbside rear roof/ upperbody compartment of** body (reference 2D drawing). Handrail shall be NFPA compliant formed from anodized aluminum with knurled anti-slip finish.

Handrail shall be back-lit with a Safetylite, 12 VDC white LED light tube. Lights shall be activated with headlight and park brake set circuits.

A safety sign FAMA23, which warns of the proper climbing method, shall be visible to personnel entering the cab and at each designated climbing location on the body.

A safety sign FAMA24, which warns personnel not to ride on the vehicle, shall be located at the rear step areas and at any cross walkways.

FOLDING STEP(S)

There shall be four (4) Innovative Controls polished cast aluminum folding step(s) provided and installed on completed vehicle. Each step shall be heavy duty with stainless steel spring and textured step surface meeting NFPA standards. **Each step shall include an LED light.**

ROLL-OUT AWNING STREETSIDE

A Carefree Mirage, 110 Volt AC powered, Lateral Arm Acrylic Patio Awning with Direct Response Electronics shall be installed on the body. The Direct Response Electronics includes easy-to-use controls and a Motion Detection System. The awning shall have a system to detect canopy motion, the most important element to prevent wind/weather damage. The awning shall automatically retract when the canopy reaches a certain level of movement, you determine the movement level on the control panel.

The 110V motor shall be completely sealed and UL approved. The awning pitch shall be adjusted to up to 30"

The awning shall be 14' long with a 10' projection, (size refers to box length; actual fabric length will be 8" shorter.)

The Mirage shall be covered by a "Two and Four" Limited Warranty - Two years 100% parts, labor, & freight on canopy, four years 100% parts, labor, and freight on motor, electronics, roller & hardware. Warranty covers manufacturer's defects only. Wind and rain damage are not covered.

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 awning is not in stowed position, as required by NFPA 1901.

awning control in standard location S1 front bulkhead.

- The Firesist HUV awning fabric color shall be crimson red (#88003-000).

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.

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AWNING LED LIGHTS

The specified awning shall be provided with white LED lights under lead rail. Lights shall be turned on automatically when awning is extended, and turned off when awning is stowed.

AWNING WIRELESS REMOTE CONTROL

The specified awning shall be provided with a wireless remote kit model SR0014 to extend and retract the awning. The Wireless Remote Control Kit will come with two (2) Key Fob Controlers.

ROLL-OUT AWNING CURBSIDE

A Carefree Mirage, 110 Volt AC powered, Lateral Arm Acrylic Patio Awning with Direct Response Electronics shall be installed on the body. The Direct Response Electronics includes easy-to-use controls and a Motion Detection System. The awning shall have a system to detect canopy motion, the most important element to prevent wind/weather damage. The awning shall automatically retract when the canopy reaches a certain level of movement, you determine the movement level on the control panel.

The 110V motor shall be completely sealed and UL approved. The awning pitch shall be adjusted to up to 30"

The awning shall be 21' wide with a 10' projection, (size refers to box length; actual fabric length will be 8" shorter.)

The Mirage shall be covered by a "Two and Four" Limited Warranty - Two years 100% parts, labor, & freight on canopy, four years 100% parts, labor, and freight on motor, electronics, roller & hardware. Warranty covers manufacturer's defects only. Wind and rain damage are not covered.

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 awning is not in stowed position, as required by NFPA 1901.

NOTE: Wind Sensor will NOT be on this awning due to having the add-a-room.
Awning Control will be in standard location by entry door into lab.

- The Firesist HUV awning fabric color shall be crimson red (#88003-000).

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.

AWNING LED LIGHTS

The specified awning shall be provided with white LED lights under lead rail. Lights shall be turned on automatically when awning is extended, and turned off when awning is stowed.

AWNING WIRELESS REMOTE CONTROL

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ADD-A-ROOM AWNING ENCLOSURE

A Carefree Buena Vista+ Add-A-Room enclosure shall be provided to enclose area under specified awning and provide protection from outside elements. The Add-A-Room length shall match awning length up to **21**'.

Features of the Add-A-Room are:

- Webbing reinforced eyelets
- Nickel plated twist fasteners
- Completely reversible
- Heavy-duty zippers
- 15 oz. 1000 denier reinforced vinyl fabric
- Zippered privacy panels
- 3' zippered door
- Storage bag

The color of the Add-A-Room shall be white.

> ***"SVI will not be responsible for damage caused by or to awning due to the Add-A-Room being attached and improper deployment of entire system or weather conditions. And SVI does not recommend the application of the Add-A-Room to any electrically operated Awning. The Awning controls should be disabled during the time of the Add-A-Room deployment to eliminate the possibility of a wind or accidental retraction of the awning and thus rendering the wind sensor as inoperative. Total time to Deploy full assembly is 30-45mins and the same time should be allotted for teardown."***

WALK-IN INTERIOR FINISH DETAILS

There shall be bent lips for an easy sweep out.

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 hammertone **Matte** black. Cardinal T013-BK62

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

Two (2) Dometic Penguin II low profile, 120 VAC, 60 cycle, single phase air conditioner(s) shall be provided and installed on roof of vehicle. The unit shall be a roof top contemporary contoured integral evaporator/condenser type with built-in heating elements.

Each unit shall be rated at minimum of 13,500 BTU cooling capacity with a heating element rated at 5,600 BTU. A three-speed fan shall supply a maximum/minimum of 320/250 cfm air flow capacity. Air conditioner(s) shall be controlled by a wall mounted Comfort Control II LCD thermostat.

The roof mounted air conditioner shall be approximately 9.5" high x 29" wide x 40" long and weigh approximately 99 lbs.

- The above rooftop Air Conditioning units shall be powered by generator only.
  One (1) unit will be Generator only & the other one (1) will be Gen/Shore power.

- The thermostat(s) for the above rooftop Air Conditioning units shall be located above the interior light switch panel.

STREETSIDE INTERIOR AREA (IS1/IS2)

SLIDE-OUT ROOM EXTENSION

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A slide-out room extension with floor level the same as the main walk-in floor shall be provided. The slide-out room shall extend approximately 32". The slide-out extension shall be up to up to 120" in width depending on body configuration. The interior height shall be approximately 11" less than the interior height of the main walk-in floor. The slide-out room shall have a water resistant seal in both the fully extended and the retracted positions. The flooring specified on main walk-in floor shall be provided on floor of slide-out room.

The slide-out section shall utilize two (2) PowerGear rail assemblies, and two (2) 12 VDC actuators for positive seal when room is extended or retracted. The floor is suspended above main floor which eliminates the possibility of damage to floor coverings. Systems that don't provide a flat floor when fully extended will NOT BE ACCEPTABLE. **A manual override shall be provided in the event of a system failure**. **There will/shall be a label showing location of the manual overide under slide-out.** The touch pad control for slide-out system shall be mounted on wall near main entry door.

The slide-out section shall be framed with 2" x 2" x 1/4" 6061-T6 alloy aluminum. The frame structure shall be covered with no less than 1/8" thick 3003-H14 smooth aluminum.

A full width padded foam cushion head bumper shall be provided along ceiling of slide-out. Head bumper shall be covered with matching interior vinyl.

There shall be two (2) flashing LED warning lights with red lenses, one (1) at each end of the slide-out section. The lights shall activate and be visible when the unit is extended.

All electrical wiring installed in the slide-out wall shall run through a boxed type conduit at the lower corner of the system. All wiring shall be enclosed in a flexible, moisture resistant, reinforced conduit, with proper seal tight connectors and hardware. Access shall be provided for inspection of all wiring and the slide-out mechanisms.

The slide-out room extension must be able to withstand years of rugged service and wear. For this reason, this design, metal thickness and attachments must be strictly adhered to. RV type slide-outs using light weight metal or fiberglass shall not be acceptable. .

SLIDE-OUT AWNING

A Carefree SlideOut Kover III shall be provided and work automatically with slide-out for increased protection of the slide-out from the elements. Helps keep leaves, debris and rain off the roof and out of the vehicle and keeps the roof cooler by blocking the sun from the roof.

The SlideOut Kover III comes with a built-in wind deflector to prevent the billowing of the slide out fabric. The full-enclosure aluminum case protects the slide out fabric from dirt and debris while traveling.

- The Firesist HUV awning fabric color shall be crimson red (#88003-000).

SLIDE-OUT KOVER

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

INTERIOR CABINET - OVERHEAD

- There shall be three (3) approximately 34" wide x **16**" 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.

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- Three (3) 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 1901 in occupied areas while vehicle is in motion.

INTERIOR BENCH SEAT

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

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

Seat material color shall be black.

INTERIOR BENCH SEAT STORAGE

The bench seat base shall be fabricated of aluminum tread plate to form a under seat storage compartment.

A hinged seat cushion shall be provided for access to seat storage.

The bench seat shall be a flip-up style with seat bottom cushion shall be mounted to a spring loaded bracket system which shall return the cushion to vertical when not in use.

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

SCBA brackets shall be recessed into seat back rest,

SEAT SCBA BRACKETS

There shall be four (4) Zico ULLH Load & Lock walkaway type SCBA bracket(s) with ejector spring that meets NFPA 1901 standards mounted in specified SCBA seats. The standard Load & Lock can handle 30 and 45-minute cylinders. To load simply place the SCBA against the seat with the valve resting on the footplate, then wrap the strap around the SCBA and lock it tightly into place. Releasing the SCBA is done by pulling the lanyard straight out, then leaning forward and standing up.

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)

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

INTERIOR CABINET - OVERHEAD

- There shall be one (1) approximately 26" wide x **16"** 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.

There will/ shall be edge protection to the under part of the cabinet.

- 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. **and Magnetic.**
- 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 1901 in occupied areas while vehicle is in motion.

CURBSIDE INTERIOR AREA (IC2)

INTERIOR CABINET - COUNTER HEIGHT

- There shall be one (1) interior counter height cabinet(s) provided on interior to ceiling. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum approximately (insert actual dimensions).
- Cabinet(s) shall be provided with vertically mounted shallow aluminum Shelf-Trac for specified component installation.
- One (1) OnScene Access white LED, full height compartment light, vertically mounted.
  - 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.
  - Cargo netting of 1" - 2" nylon webbing shall be provided over cabinet opening with automotive seatbelt style latches.
- The compartment light(s) shall be controlled by a latching, black rocker switch with amber indicator light. The switch shall be labeled as "COMPARTMENT LIGHTS" with a black and chrome label bezel.
  - 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.
- 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).
- There shall be two (2) fabricated 120 VAC outlet strip(s) with straight blade household type outlets provided. Each strip will house five (5) duplex outlets (total of 10 plug ins) with one (1) being Inverter power. Outlet strips will be located one (1) on top part of cabinet , and the other on the bottom of cabinet. (Interior)
  - Outlet(s) shall be powered through the on-board generator system.
  - The outlet shall be located on rearward wall, upper left area.

- Outlet(s) shall be powered through the on-board generator system.
- The outlet shall be located on rear wall, upper left area.

INTERIOR CABINET - OVERHEAD

- There shall be one (1) approximately 42" wide x **16**" 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 1901 in occupied areas while vehicle is in motion.
- There shall be one (1) 120 VAC outlet(s) located under desk against the back edge.
  - The outlet receptacle(s) shall be 20 amp, straight-blade (NEMA 5-20R).
  - Outlet(s) shall be powered through the on-board generator system.
- 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 specified inverter (confirm inverter is auto switching capable).
  - The outlet shall be located on rear wall, upper left area.

CAB, CAB DESK, CABINET - VDC COMPONENTS

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

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All electrical circuit feeder wiring supplied and installed by the fire apparatus manufacturer shall meet the requirements of NFPA Chapter 13.

The circuit feeder wire shall be stranded copper or copper alloy conductors of a gauge rated to carry 125% of the maximum current for which the circuit is protected. Voltage drops in all wiring from the power source to the using device shall not exceed 10%. The use of star washers for circuit ground connections shall not be permitted.

All circuits shall otherwise be wired in conformance with SAE J1292, *Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring.*

Wiring and Wire Harness Construction

All insulated wire and cable shall conform to SAE J1127, *Low Voltage Battery Cable,* or SAE J1128, *Low Voltage Primary Cable,* type SXL, GXL, or TXL.

All conductors shall be constructed in accordance with SAE J1127 or SAE J1128, except where good engineering practice dictates special strand construction. Conductor materials and stranding, other than copper, shall be permitted if all applicable requirements for physical, electrical, and environmental conditions are met as dictated by the end application. Physical and dimensional values of conductor insulation shall be in conformance with the requirements of SAE J1127 or SAE J1128, except where good engineering practice dictates special conductor insulation. The overall covering of conductors shall be moisture-resistant loom or braid that has a minimum continuous rating of 194°F (90°C) except where good engineering practice dictates special consideration for loom installations exposed to higher temperatures. The overall covering of jacketed cables shall be moisture resistant and have a minimum continuous temperature rating of 194°F (90°C), except where good engineering practice dictates special consideration for cable installations exposed to higher temperatures.

All wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection. The wiring connections and terminations shall be installed in accordance with the device manufacturer's instructions. All ungrounded electrical terminals shall have protective covers or be in enclosures. Wire nut, insulation displacement, and insulation piercing connections shall not be used.

Wiring shall be restrained to prevent damage caused by chafing or ice buildup and protected against heat, liquid contaminants, or other environmental factors.

Wiring shall be uniquely identified at least every 2 ft (0.6 m) by color coding or permanent marking with a circuit function code. The identification shall reference a wiring diagram.

Circuits shall be provided with properly rated low voltage over-current protective devices. Such devices shall be readily accessible and protected against heat in excess of the over-current device's design range, mechanical damage, and water spray. Circuit protection shall be accomplished by utilizing fuses, circuit breakers, fusible links, or solid state equivalent devices.

If a mechanical-type device is used, it shall conform to one of the following SAE standards:
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.

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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.

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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.

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.

MULTIPLEX SYSTEM INTERFACE DISPLAY

The Weldon V-MUX Vista IV multiplex system interface display(s) shall be provided by the cab/chassis manufacturer. The full-color Vista interface display allows the user to control warning and scene lighting, HVAC controls (when specified), and view on-board diagnostics including service information. This display has a wide operating temperature range, automatic screen switching in response to current conditions, and a sleep mode option to eliminate night glare. The following features shall be included;

- 800 x 480 resolution
- Four video ports
- Flash updates with USB memory stick
- Display inside and outside temperature (when specified)
- Automatic climate control (when specified)
- 100% Configurable (OEM Level)
- Field re-programmable
- Peer to peer network
- On-board diagnostics / service information
- Colors change to indicate button status
- Video Ready for: Backup camera, Thermal camera, DVD, GPS...

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.

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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 disconnect switch shall be provided in cab located within easy reach of driver with green indicator light that is visible from the driver's position. The switch and indicator light shall be supplied and installed by the cab/chassis manufacturer.

BATTERY SOLENOID

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

BATTERY CONDITIONER

The battery conditioner shall be supplied and installed by the cab chassis manufacturer.

SHORE POWER INLET

The shore power inlet for battery conditioner shall be supplied and installed by the cab chassis manufacturer.

- The shore power plug shall be located near the Driver door area.

ENGINE COMPARTMENT LIGHT

Engine compartment light(s) shall be supplied and installed by the cab chassis manufacturer.

CAB HAZARD WARNING LIGHT

A red flashing or rotating light, located in the driving compartment. The light shall be furnished by the cab/chassis manufacturer. The light shall be illuminated automatically whenever the vehicles parking brake is not fully engaged and any of the following conditions exist:

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

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

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

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The hazard light shall be labeled "DO NOT MOVE APPARATUS WHEN FLASHING".

BACK-UP ALARM

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

BODY MOUNTED 360 CAMERAS

The cab chassis provided three (3) FRC Seon series 360 cameras shall be installed on the sides and rear of the body. Camera system shall be calibrated and operational upon delivery.

INTERIOR LED LIGHTS

Three (3) 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.

One (1)- In cab as shown on 2D drawing
two (2)- In the lab of body as shown on 2D drawing

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 Three (3) 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;

Configuration will be Top to Bottom:
Brake, Turn, Back-up, Warning

- Two (2) Federal amber LED QL64Z-ARROW turn signal lights
- Two (2) Federal red LED QL64Z-BTT stop/tail lights
- Two (2) Federal white LED QL64Z-BACKUP 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.
Note: These will be with ignition only.

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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.

CAB STEP LIGHTS / GROUND LIGHTS

The step lights and/or ground lights shall be supplied and installed by the cab/chassis manufacturer.

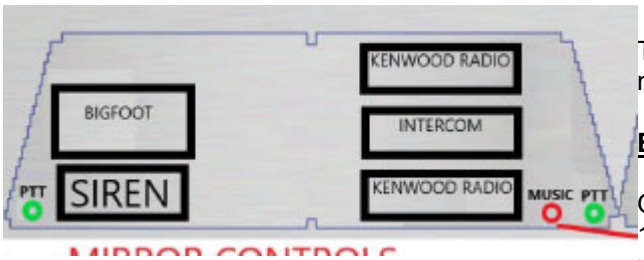
LICENSE PLATE MOUNTING BRACKET

There shall be one (1) Cast Products aluminum license plate mounting with chrome shielded license plate light mounted on the rear of the body.

ELECTRONIC SIREN

The siren control head shall be supplied by the cab/chassis manufacturer, **SVI installed.**
Siren power shall be wired through the master warning light switch.

Center Dash Panel



The specified siren functions shall be configured by cab chassis manufacturer.

ELECTRONIC SIREN

One (1) Federal PA300R model 690015 remote single control head, 100/200 watt electronic siren with standard microphone shall be provided and installed in cab within easy reach of Driver. Siren features; Wail, Yelp, Air-horn, Hi/Low tones, Manual, and Tap II intersection clearing. 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.

FRONT SCENE LIGHT(S)

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

The front of the cab shall include **two (2) FRC Mini Brow Light Model FT-MB-15-FT-B** LED scene light provided and installed on the brow of the cab.

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

The scene light shall be powered by the 12 VDC electrical system
The housing shall be powdercoat painted Black..

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

SIDE SCENE LIGHTS

There shall be four (4) Federal Signal QudraFlare model QL97LEDSCENE, 9” x 7” recess mounted LED scene lights provided on the upper body. Light quantity shall be divided equally per side. Each light will have a clear lens and chrome bezel.

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

SIDE SCENE LIGHTS

There shall be two (2) Fire Research Spectra Max model SPA260-Q20 surface mount LED light(s) provided on the upper body. Light quantity shall be divided equally per side. The light(s) shall be mounted with four (4) screws to a flat surface. It shall be no more than 6" high by 14 1/2" wide and have a profile of less than 1 3/4" beyond the mounting surface. Wiring shall extend from the electronics box at the rear of the lamphead. Lamphead shall be provided with white powder coat finish with chrome bezel.

The lamphead shall have sixty (60) ultra-bright white LEDs, 56 for flood lighting and 4 to provide a spot light beam pattern. It shall operate at 12 volts DC, draw 13.8 amps, and generate 20,000 lumens of light. The lamphead shall have a unique lens that directs flood lighting onto the work area and focuses the spot light beam into the distance.

Lamphead shall be provided with a lifetime warranty to original apparatus purchaser.

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

Floodlight housing shall be white with chrome bezel.

REAR SCENE LIGHTS

There shall be two (2) Federal QuadraFlare model QL97LEDSCENE, 9” x 7” recess mounted LED scene lights provided on the upper rear body. Each light will have a clear lens and chrome bezel.

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

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

The rear scene lights shall also be activated when the apparatus is in reverse.
There shall be a switch on the rear of truck on Streetside (as shown in 2D drawing) for Scene Lights/ working lights.

REAR SCENE LIGHTS

There shall be two (2) Fire Research Spectra Max model SPA260-Q20 surface mount LED lights installed, one (1) per side in the upper rear portion of the body. The light(s) shall be mounted with four (4) screws to a flat surface. It shall be no more than 6" high by 14 1/2" wide and have a profile of less than 1 3/4" beyond the mounting surface. Wiring shall extend from the electronics box at the rear of the lamphead.

The lamphead shall have sixty (60) ultra-bright white LEDs, 56 for flood lighting and 4 to provide a spot light beam pattern. It shall operate at 12 volts DC, draw 13.8 amps, and generate 20,000 lumens of light. The lamphead shall have a unique

lens that directs flood lighting onto the work area and focuses the spot light beam into the distance. The lamphead housing shall be powder coated white with chrome bezel.

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.

Lamphead shall be provided with a lifetime warranty to original apparatus purchaser.

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

The rear scene lights shall also be activated when the apparatus is in reverse.
There shall be a switch on the rear of truck on Streetside (as shown in 2D drawing) for Scene Lights/ working lights.

Floodlight housing shall be white with chrome bezel.

TRAFFIC DIRECTIONAL LIGHT

Eight (8) Federal Signal MicroPulse model **MPS12U-A** amber LED lights **and one (1) Federal Signal MircoPulse MPS12U-R** shall be provided and installed on the upper rear face of the body, evenly distributed (if split by a hose bed, walkway or other obstruction). The lights shall be controlled by the Weldon multiplexing system and provide; Left Arrow, Right Arrow, Center Out and Wig Wag patterns. The Wig Wag light pattern shall be activated with the E-Master and can be switched to the other patterns at anytime through the "TRAFFIC ADVISOR" menu on the Vista Screen.
Red Light will function as a brake light.

WARNING LIGHT PACKAGE

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

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

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

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

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

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

A switching system shall be provided that senses the position of the parking brake or the park position of an automatic transmission. When the master optical warning system switch is closed and the parking brake is released or the automatic transmission is not in park, the warning devices signaling the call for the right-of-way shall be energized. When the master optical warning system switch is closed and the parking brake is on or the automatic transmission is in park, the warning

devices signaling the blockage of the right-of-way shall be energized. The system shall be permitted to have a method of modifying the two (2) signaling modes.

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

Steadily burning, non flashing optical sources shall be permitted to be used.

UPPER LEVEL OPTICAL WARNING DEVICES

The upper-level optical warning devices shall be mounted as high and as close to the corner points of the apparatus as is practical to define the clearance lines of the apparatus. The upper-level optical warning devices shall not be mounted above the maximum height, specified by the device manufacturer.

ZONE A - FRONT WARNING LIGHTS

See Chassis Modification section for cab mounted warning lights.

ZONE B & D - SIDE WARNING LIGHTS

There shall be four (4) Federal Signal QL97 LED Light(s) provided, two (2) each side. The light head shall include twenty-six (26) programmable flash patterns 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 - Simultaneous

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

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Federal Signal QL97 LED Light(s) provided, one (1) each side. The light head shall include twenty-six (26) programmable flash patterns 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 - Simultaneous

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

LOWER LEVEL OPTICAL WARNING DEVICES

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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

The front lower warning lights shall be supplied and installed by the cab/chassis manufacturer. They shall be Federal lights to complete an NFPA compliant lower level warning light system.

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 QL64 LED Light(s) provided, one (1) each side. The light head shall include twenty-six (26) programmable flash patterns 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 - Simultaneous

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

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

There shall be four (4) Federal Signal QL64 LED Light(s) provided, two (2) each side. The light head shall include twenty-six (26) programmable flash patterns 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 - Simultaneous

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

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

There shall be two (2) Federal Signal QL64 LED Light(s) provided, one (1) each side. The light head shall include twenty-six (26) programmable flash patterns 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 - Simultaneous

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

ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be two (2) Federal Signal QL64 LED Light(s) provided, one (1) each side. The light head shall include twenty-six (26) programmable flash patterns 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 - Simultaneous

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

LINE VOLTAGE ELECTRICAL SYSTEM

DIESEL GENERATOR

A Cummins/Onan model SD 20, diesel driven generator shall shallbe installed on the vehicle. The generator shall be installed so that fumes, vapors, heat, and vibrations do not enter the driving or crew compartment. The generator shall be rated at 20,000 watts continuous at 120/240 VAC, 166/83 amps, single phase. Current frequency shall be stable at 60 hertz.

The engine shall be a Kubota model D1803-CR-TIE4BG, with fuel consumption @ 25% / 50% / 100% Load .14 / .70 / 1.44 (US Gal./hr.). Unit shall be 58" wide x 26." deep, x 28" high, and weigh 1,035 lbs.

If the generator is installed in a compartment and the compartment doors must be open during its operation, the generator shall be equipped with an interlock system to prevent its operation if the doors are not open, or the compartment shall be equipped with a high temperature alarm.

If the generator is located in a position on the apparatus where the operator cannot see the instrumentation and operate the controls while standing at ground level or positioned at a specifically designated operator station, an operating panel with the required instrumentation, start and stop controls, and other controls necessary for safe operation shall be provided at a remote operator’s panel.

Generator shall be equipped with a high temperature automatic shutdown system and a low oil (pressure or level) automatic shutdown system. The generator shall be installed in accordance with the generator manufacturer's requirements for ventilation and service accessibility.

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.

WARRANTY PERIOD

Provided such goods are operated and maintained in accordance with Onan's written instructions, Onan warrants that the Generators shall be free from defects in material and workmanship for a period of two (2) years or two thousand (2,000) hours, whichever comes first, from the date of delivery to the first purchaser.

GENERATOR MOUNTING

The generator shall be mounted in an upper dunnage area or roof compartment on rubber vibration isolators. The compartment shall be reinforced and ventilated where necessary to hold weight and provide cooling air for the generator. A valve shall be provided on the generator oil drain outlet and piped to underside of generator compartment with flexible hose and plug. The drain shall be located where easily accessible for generator service.

FUEL SYSTEM

The generator fuel system shall be plumbed to the chassis main fuel tank. A separate fuel line shall be installed directly from the tank, not connected to the truck engine fuel line system. The generator fuel line shall be properly protected and secured inside of chassis frame. A shut-off valve shall be provided between the generator and fuel line as it enters the compartment.

Fuel lines shall be protected from chafing at all wear points. If the fuel source is shared with the apparatus engine, a separate fuel pickup system shall be provided that is arranged to ensure that the generator cannot utilize more than 75 percent of the fuel tank capacity.

STARTING SYSTEM

The generator starting system shall be powered by chassis battery system with heavy duty stranded copper cables. The starter line shall by-pass the chassis master switch to permit generator operation when the apparatus engine is not running. This starter line shall be of sufficient size for the generator, adequately protected and supported inside the chassis frame area.

COOLING

Since the generator is radiator cooled, the ventilation of the generator is crucial. The installation shall permit operation of the unit both while the apparatus is stationary and while it is in motion.

The cooling air flow shall be through screened panels in the compartment doors. Two (2) dual Flex-a-lite fans will be installed to help direct the air flow through the compartment; one (1) fan will push the air into the compartment while the other fan pulls the air out.

The additional fans shall provide adequate air flow for operation of the generator in stationary or moving, with the compartment doors in the closed position.

EXHAUST SYSTEM

The generator exhaust system shall be equipped with a residential type muffler for maximum quieting, and black iron rigid pipe to link the generator to the muffler.

The exhaust piping and discharge shall be located or shielded to prevent thermal damage to the apparatus or equipment. The exhaust shall be piped to the exterior of the vehicle and discharged at a location away from any operator's position.

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

Silencing devices shall be provided and shall not create exhaust back pressure that exceeds the limits specified by the engine manufacturer.

MANUALS AND SCHEMATICS

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

GENERATOR COMPARTMENT INSULATION

The generator compartment shall be provided with heavy duty sound insulation applied to walls and ceiling. Insulation shall have a high temperatures rating with a foil facing and attached to walls with a positive type fasteners, glue type adhesive shall not be acceptable.

GENERATOR CONTROLS

In addition to generator controls provided at the generator, there shall be controls provided in the cab near the 12 volt control panel. The following controls shall be provided:

- One (1) pre-heat switch (if generator is diesel).
- One (1) start/stop switch.
- One (1) generator running indicator light.

GENERATOR CONTROLS

In addition to generator controls provided at the generator, there shall be controls provided in the interior walk-in area near entry door. The following controls shall be provided:

- One (1) pre-heat switch (if generator is diesel).
- One (1) start/stop switch.
- One (1) generator running indicator light.

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CIRCUIT BREAKER BOX

There shall be a Newmar 120/240, 100 Amp VAC distribution/breaker panel provided on completed vehicle. All circuit breakers shall be rated to the wire size and load demand of each circuit.

There shall be color coded LED indicator lights provided to indicate the status of each branch breaker.

Each individual switch and all meters shall be back lit for identification in low light situations.

The panel shall have four (4) meters:

- One (1) to monitor frequency
- One (1) to monitor line voltage
- One (1) to monitor load current (amps)
- One (1) hour meter to register genset run time

Each circuit breaker shall be hydraulic/magnetic trip free style with a manual reset.

Shore power shall be wired to the vehicle main circuit breaker in the circuit breaker distribution panel and feed all 120/240 electrical circuits.

To protect both the generator and external shore power source from back feed, a 3-way manual switch shall be provided with specified Newmar generator distribution panel to cut-off the connection between the vehicle circuits and the generator when the external shore power source plug is in use. Switch shall be labeled "SHIP" - "OFF" - "SHORE".

The entire panel shall be mounted via a piano style hinge that allows the front panel to open for access to the breakers.

SHORE POWER INLET - BATTERY CHARGER

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

120/240 VAC OUTLETS AND CIRCUITS

The generator and or shore power shall supply the 120/240 volt electrical equipment and outlets outlined below. Proper circuit protection shall be installed as noted:

INVERTER

A Newmar model Auto Power 3000, uses 12 volt battery power to produce pure sine wave 120 VAC power in mobile applications, and recharges vehicle batteries when an external AC source is available. The circuitry and construction are field-proven to provide reliable power in harsh environments and in rugged mobile and industrial applications.

- 3000 Watt Continuous / 5500 Watt surge / 150 Amp Max, Pure Sine
- Built - in, high output 3 stage charger for rapid battery bank replenishment - programmable for Gel, lead acid or AGM battery
- Automatic electronic short circuit/overload protection
- Automatic over temperature shutdown, and AC output circuit breaker(s)
- Automatic low battery shutdown at 10.5VDC with in-rush delay
- Auto Sleep Mode when the LED Display Panel is used, the inverter can be programmed to go to sleep after no load is detected over programmed interval
- Heavy duty powder coated aluminum construction and conformal coated circuitry
- 3 year warranty

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- Remote LCD Monitor & Control Panel, TQ-DSP-12/24

Inverter:
Output Power: 3000 Watts (Cont.) / 5500 Watts (Surge)
Output Current: 25 Amps AC Cont., 80 Amps Peak
Output Voltage: 120 +/- 3%
Output Frequency: 60 +/- .05%
Output Waveform: Pure Sine < 5% THD
Input Current: Up to 263 Amps DC Cont.
Input Voltage: 10.5 to 17.0 VDC

Charger:
Output Current: 3 Stage, up to 150 Amps DC
Input Current: Up to 22 Amps VAC

General:
Operating Temperature: 0 F to 149 F, (-20 C to 65 C)
Efficiency: Up to 88%
Weight: 68 lbs
Warranty: 3 Years

INVERTER BATTERY SUPPLY

There shall be three (3) deep cycle batteries provided as the 12 VDC power source for the onboard inverter. The batteries shall incorporate Absorbent Glass Mat (AGM) technology for efficient gas recombination of up to 99% and freedom from electrolyte maintenance. The batteries shall be mounted in a stainless steel pan with hold down provisions for mobile application.

Batteries will be group 31 and have studs on the top.

INVERTER BATTERY SUPPLY - VSR

There shall be a BEP model 701-MDVS motorized voltage sensitive relay (VSR) provided with the specified inverter battery system. The VSR allows both the starting and inverter battery systems to be charged at the same time. When the engine is started and the starting batteries reaches 13.7 VDC, the VSR engages allowing both battery banks (starting and inverter) to be charged simultaneously. When the voltage drops below 12.8 VDC (e.g. the engine is stopped), the VSR disengages, separating the batteries.
This system eliminates the possibility of draining the starting batteries and protects sensitive electronic equipment powered from the house battery from harmful engine start up spikes. System shall be protected from overcharging from alternator with a 300 amp fuse. The VSR shall have a limited 5 year warranty.

SHORE POWER INLET - INVERTER

A transfer switch shall be required to isolate one power source from the other where a circuit(s) is intended to be supplied from more than one power source. To protect both the generator and external power source from back feed, two (2) 120 volt, 30 ampere, 4PST auxiliary contact with safety interlock relay shall be installed. Relay shall cut-off the connection between the generator supply circuit and device circuits when shore power is connected.

Transfer equipment, including transfer switches, shall operate such that all ungrounded conductors of one power source are disconnected before any ungrounded conductors of the second power source are connected. The neutral conductor shall be switched through the transfer switch. The apparatus shall have a label permanently affixed at the power inlet that indicates the line voltage, and amperage.

SHORE POWER INLET

One (1) Kussmaul 120 VAC, 30 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.

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

Shore power shall be wired to the specified 120 volt inverter.

LINE VOLTAGE ELECTRICAL SYSTEM

GENERAL REQUIREMENTS

Stability

Any fixed line voltage power source producing alternating current (ac) shall produce electric power at 60 Hz, ±3 Hz when producing power at all levels between no load and full rated power. Any fixed line voltage power source shall produce electric power at the rated voltage ±10 percent when producing power at all levels between no load and full rated power.

The maximum voltage supplied to portable equipment shall not exceed 275 volts to ground. Higher voltage shall be permitted only when used to operate fixed wired, permanently mounted equipment on the apparatus.

Conformance with National Electrical Code

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

Where available, line voltage electrical system equipment and materials included on the apparatus shall be listed and used only in the manner for which they have been listed. All equipment and materials shall be installed in accordance with the manufacturer's instructions.

Location Ratings

Any equipment used in a dry location shall be listed for dry locations. Any equipment used in a wet location shall be listed for wet locations.

Any equipment, except a PTO-driven generator, used in an underbody or under chassis location that is subject to road spray shall be either listed as Type 4 or mounted in an enclosure that is listed as Type 4.

If a PTO-driven generator is located in an underbody or under chassis location, the installation shall include a shield to prevent road spray from splashing directly on the generator.

Grounding

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Grounding shall be in accordance with 250.34(A) and 250.34(B) of *NFPA 70*. Ungrounded systems shall not be used.

Only stranded or braided copper conductors shall be used for grounding and bonding.

The grounded current-carrying conductor (neutral) shall be insulated from the equipment-grounding conductors and from the equipment enclosures and other grounded parts.

The neutral conductor shall be colored white or gray in accordance with 200.6, “Means of Identifying Grounded Conductors,” of *NFPA 70*.

Any bonding screws, straps, or buses in the distribution panel board or in other system components between the neutral and equipment-grounding conductor shall be removed and discarded.

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Bonding

The neutral conductor of the power source shall be bonded to the vehicle frame. The neutral bonding connection shall occur only at the power source. In addition to the bonding required for the low voltage return current, each body and each driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor.

The conductor shall have a minimum amperage rating, as defined in 310.15, “Ampacities for Conductors Rated 0–2000 Volts,” of *NFPA 70*, of 115 percent of the rated amperage on the power source specification label.

A single conductor that is sized to meet the low voltage and line voltage requirements shall be permitted to be used.

Ground Fault Circuit Interrupters

In special service vehicles incorporating a lavatory, sink, toilet, shower, or tub, 120 V, 15 or 20 A receptacles within 6 ft (1.8 m) of these fixtures shall have ground fault circuit interrupter (GFCI) protection. GFCIs integrated into outlets or circuit breakers or as stand-alone devices shall be permitted to be used in situations.

Power Source General Requirements

All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source.

The power source shall be shielded from contamination that would prevent the power source from operating within its design specifications.

Power Source Rating

For power sources of 8 kW or larger, the power source manufacturer shall declare the continuous duty rating that the power source can provide when installed on fire apparatus according to the manufacturer’s instructions and run at 120°F (49°C) air intake temperature at 2000 ft (600 m) above sea level.

The rating on the power source specification label shall not exceed the declared rating from the power source manufacturer.

Access shall be provided to permit both routine maintenance and removal of the power source for major servicing. The power source shall be located such that neither it nor its mounting brackets interfere with the routine maintenance of the fire apparatus.

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Instrumentation

If the power source is rated at less than 3 kW, a “Power On” indicator shall be provided. If the power source is rated at 3 kW or more but less than 8 kW, a voltmeter shall be provided.

If the power source is rated at 8 kW or more, the following instrumentation shall be provided at an operator’s panel:

8) Voltmeter
9) Current meters for each ungrounded leg
10) Frequency (Hz) meter
11) Power source hour meter

The instrumentation shall be permanently mounted at an operator’s panel. The instruments shall be located in a plane facing the operator. Gauges, switches, or other instruments on this panel shall each have a label to indicate their function.

The instruments and other line voltage equipment and controls shall be protected from mechanical damage and not obstructed by tool mounting or equipment storage.

An instruction plate(s) that provides the operator with the essential power source operating instructions, including the power-up and power-down sequence, shall be permanently attached to the apparatus at any point where such operations can take place.

Operation

Provisions shall be made for placing the generator drive system in operation using controls and switches that are identified and within convenient reach of the operator.

Where the generator is driven by the chassis engine and engine compression brakes or engine exhaust brakes are furnished, they shall be automatically disengaged for generator operations.

Any control device used in the generator system power train between the engine and the generator shall be equipped with a means to prevent unintentional movement of the control device from its set position in the power generation mode.

If there is permanent wiring on the apparatus that is designed to be connected to the power source, a power source specification label that is permanently attached to the apparatus at the operator’s control station shall provide the operator with the information required.

The power source, at any load, shall not produce a noise level that exceeds 90 dBA in any driving compartment, crew compartment, or onboard command area with windows and doors closed or at any operator’s station on the apparatus.

Power Supply Assembly

The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 12 ft (4 m) in length.

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent amperage rating and shall be sized to carry not less than 115 percent of the amperage of the nameplate current rating of the power source.

If the power supply assembly connects to the vibrating part of a generator (not a connection on the base), the conductors shall be flexible cord or other fine-stranded conductors enclosed in metallic or nonmetallic liquid tight flexible conduit rated for wet locations and temperatures not less than 194°F (90°C).

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Over-current Protection

Manually re-settable over current devices shall be installed to protect the line voltage electrical system components.

Power Source Protection

A main over current protection device shall be provided that is either incorporated in the power source or connected to the power source by a power supply assembly.

The size of the main over current protection device shall not exceed 100 percent of the rated amperage stated on the power source specification label or the rating of the next larger available size over current protection device, where so recommended by the power source manufacturer.

If the main over current protection device is subject to road spray, the unit shall be housed in a Type 4–rated enclosure.

Branch Circuit Over-current Protection

Over current protection devices shall be provided for each individual circuit and shall be sized at not less than 15 amps in accordance with 240.4, “Protection of Conductors,” of *NFPA 70*.

Any panel board shall have a main breaker where the panel has six or more individual branch circuits or the power source is rated 8 kW or larger.

Each over current protection device shall be marked with a label to identify the function of the circuit it protects.

Dedicated circuits shall be provided for any large appliance or device (air conditioning units, large motors, etc.) that requires 60 percent or more of the rated capacity of the circuit to which it is connected, and that circuit shall serve no other purpose.

Panelboards

All fixed power sources shall be hardwired to a permanently mounted panel board unless one of the following conditions exists:

1) All line voltage power connections are made through receptacles on the power source and the receptacles are protected by integrated over current devices.
2) Only one circuit is hardwired to the power source, which is protected by an integrated over current device.

The panel shall be visible and located so that there is unimpeded access to the panel board controls. All panel boards shall be designed for use in their intended location. The panel(s) shall be protected from mechanical damage, tool mounting, and equipment storage.

Where the power source is 120/240 V and 120 V loads are connected, the apparatus manufacturer or line voltage system installer shall consider load balancing to the extent that it is possible.

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Wiring Methods

Fixed wiring systems shall be limited to the following:

1) Metallic or nonmetallic liquid tight flexible conduit rated at temperatures not less than 194°F (90°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C)
2) Type SOW, SOOW, SEOW, or SEOOW flexible cord rated at 600 V and at temperatures not less than 194°F (90°C)

Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring and shall be arranged as follows:

1) Separated by a minimum distance of 12 in. (300 mm) from exhaust piping or shielded from such piping
2) Separated from fuel lines by a minimum distance of 6 in. (150 mm)

A means shall be provided to allow “flexing” between the driving and crew compartment, the body, and other areas or equipment whose movement would stress the wiring.

Electrical cord or conduit shall be supported within 6 in. (150 mm) of any junction box and at a minimum of every 24 in. (600 mm) of run.

Supports shall be made of nonmetallic materials or of corrosion-resistant or corrosion-protected metal. All supports shall be of a design that does not cut or abrade the conduit or cord and shall be mechanically fastened to the apparatus.

Only fittings and components listed for the type of cord or conduit being installed shall be used.

Splices shall be made only in a listed junction box.

Additional Requirements for Flexible Cord Installations

Where flexible cord is used in any location where it could be damaged, it shall be protected by installation in conduit, enclosures, or guards.

Where flexible cord penetrates a metal surface, rubber or plastic grommets or bushings shall be installed.

Wiring Identification

Each line voltage circuit originating from the main panel board shall be identified.

The wire or circuit identification either shall reference a wiring diagram or wire list or shall indicate the final termination point of the circuit.

Where pre-wiring for future power sources or devices exists, the un-terminated ends shall be marked with a label showing their wire size and intended function.

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Wiring System Components

Only stranded copper conductors with an insulation rated for temperatures of at least 194°F (90°C) and wet locations shall be used. Conductors in flexible cord shall be sized in accordance with Table 400.5(A) of *NFPA 70*. Conductors used in conduit shall be sized in accordance with 310.15, “Ampacities for Conductors Rated 0–2000 Volts,” of *NFPA 70*. Aluminum or copper-clad aluminum conductors shall not be used.

All boxes shall conform to and be mounted in accordance with Article 314, “Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Manholes,” of *NFPA 70*. All boxes shall be accessible using ordinary hand tools. Boxes shall not be permitted behind welded or pop-riveted panels.

The maximum number of conductors permitted in any box shall be in accordance with 314.16, “Number of Conductors in Outlet, Device, and Junction Boxes, and Conduit Bodies,” of *NFPA 70*.

All wiring connections and terminations shall provide a positive mechanical and electrical connection. Connectors shall be installed in accordance with the manufacturer’s instructions. Wire nuts or insulation displacement and insulation piercing connectors shall not be used.

Each switch shall indicate the position of its contact points (i.e., open or closed) and shall be rated for the continuous operation of the load being controlled. All switches shall be marked with a label indicating the function of the switch. Circuit breakers used as switches shall be “switch rated” (SWD) or better. Switches shall simultaneously open all associated line voltage conductors. Switching of the neutral conductor alone shall not be permitted.

Line voltage circuits controlled by low voltage circuits shall be wired through properly rated relays in listed enclosures that control all non-grounded current-carrying conductors.

Receptacles and Inlet Devices

Wet and Dry Locations

All wet location receptacle outlets and inlet devices, including those on hardwired, remote power distribution boxes, shall be of the grounding type, provided with a wet location cover, and installed in accordance with Section 406.8, “Receptacles in Damp or Wet Locations,” of *NFPA 70*.

All receptacles located in a wet location shall be not less than 24 in. (600 mm) from the ground. Receptacles on off road fire apparatus shall be a minimum of 30 in. (750 mm) from the ground. All receptacles located in a dry location shall be of the grounding type and shall be at least 12 in. (300 mm) above the interior floor height. No receptacle shall be installed in a face-up position.

The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees off vertical.

Receptacle Label

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

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

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

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Wiring Schematics

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

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

LIGHT TOWER

One (1) Command Light, CL 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. Light towers 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. Light towers that are only capable of rotation at the top of a pole are not acceptable to the specified light 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 as required by NFPA 1901.

A red flashing or rotating light located in the driving compartment shall be illuminated automatically whenever the vehicles parking brake is not fully engaged, indicating that the light tower is not in stowed position, as required by NFPA 1901.

Light Tower Floodlights

The Command Light model CL802A-CH shall be equipped with the following bank of floodlights:

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Floodlight manufacturer:	Fire Tech
Number of lamp heads:	Eight (8) Helios LED
Voltage:	120 volts
Watts of each lamp head:	60 watt
Total watts of light tower:	780 watts
Total lumens of light tower:	112,000 lumens
Configuration:	The light heads shall be mounted with four (4) on each side of the light tower, giving two (2) vertical lines of four (4) 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 two (2) 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 light tower shall be mounted to roof of the custom cab which shall be reinforced as necessary to support weight of the light tower.

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

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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.
CAMERA/MAST SYSTEM

CAMERA MAST SYSTEM

No camera and mast system shall be required on completed unit.

INFORMATION TECHNOLOGY (IT) SYSTEMS

All information technology systems specified below shall be supplied, installed, and supported by the contractor including, but not limited to the design, inter-connecting wiring, and integration of all specified systems. Under no circumstances will the installation of these systems be subcontracted

The following information technology systems shall be provided and installed on completed unit as follows;

GALLEY AREA

The apparatus interior shall be provided with a galley area. The galley shall be furnished with the following features as detailed below.

GALLEY CABINET - COUNTER HEIGHT

There shall be one (1) interior counter height cabinet(s) provided in the galley. 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. Paint color shall be **black**.

- 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.

INTERIOR CABINET - OVERHEAD

There shall be one (1) overhead cabinet(s) provided in the galley. 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. Paint color shall be **Black**.

- 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 1901 in occupied areas while vehicle is in motion.

GALLEY MICROWAVE

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There shall be one (1) commercial grade microwave oven furnished and installed in the upper storage compartment. The unit shall be a 1000-watt minimum with stainless steel cabinet. The built-in dimensions shall be 12" high x 20-1/2" wide x 16" deep.

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.

GALLEY OUTLETS

The following 120 volt outlets shall be provided in the galley area:

- One (1) 120 volt, 20 amp, straight blade outlet behind the microwave.
- One (1) 120 volt, 20 amp, straight blade outlet with 12 volt wiring on the **counter**.
- One (1) 120 volt, 20 amp, GFI straight blade outlet on the counter back splash.
- One (1) 120 volt, 20 amp, GFI straight blade outlet in the **IS1/IS2** cabinet.

INTERIOR CABINET - OVERHEAD

There shall be one (1) overhead cabinet(s) provided in the galley. 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. Paint color shall be gray.

- 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 1901 in occupied areas while vehicle is in motion.

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.

NETWORK SYSTEM

DATA RACK #1

MIDDLE ATLANTIC 40U DATA RACK

There shall be one (1) Middle Atlantic Products model # MRK-4031, EIA compliant 19” gangable equipment rack(s) provided and installed on completed vehicle **behind officer seat.**

Riverside County Fire Department

Overall dimensions shall be 76.125” H x 22.0” W x 31” D. Useable height shall be 40 rack spaces, useable depth shall be 24”. Fully welded construction shall provide a static capacity of 10,000 lbs. and a UL Listed load capacity of 2,500 lbs.

Rack shall be constructed of the following materials: top and bottom shall be 14-gauge steel, horizontal braces shall be 16-gauge steel, rear door shall be 18-gauge steel and all structural elements shall be finished in a durable black powder coat.

Rack shall come equipped with two pairs of 11-gauge steel rack rail with tapped 10-32 mounting holes in universal EIA spacing, black e-coat finish and numbered rack spaces.

Rack shall have removable split rear knockout panels with 1/2”, 3/4”, 1” and 1-1/2” electrical knockouts and top BNC knockouts for UHF/VHF antenna.

DOOR

A solid steel front door shall be provided with black textured powder coat finish and key lock. The door shall be capable of hinging on either the left or the right of the rack.

FANS

A thermostatically controlled integrated fan tops shall be provided and include 4-1/2 inch fans, fan guards and proportional speed fan controller that increases fan life, reduces noise, saves energy, and reduces dust build up.

POWER STRIP

A rack mount (1U) power distribution unit shall be provided and equipped with eight (8) circuit breaker protected NEMA 5-20R rear outlets, and one (1) front NEMA 5-15R outlet. An illuminated combination power switch/circuit breaker is located on the front panel. Power strip shall be UL listed in the US and Canada.

UNINTERRUPTABLE POWER SUPPLY

AN APC #SMX3000RMLV2U rack mounted Uninterruptible Power Supply (UPS) shall be provided to protect from electronic equipment power blackouts, brownouts, sags and surges. The UPS filters small utility line fluctuations and isolates electronic equipment from large disturbances by internally disconnecting from the line power. The UPS provides continuous power from the batteries until utility power returns to safe levels or the batteries are fully discharged. The UPS shall have the following features;

- 3000 VA 2700 Watts
- (9) NEMA 5-15R
- (2) NEMA 5-20R Outlets
- RS-232, USB, Smart-Slot

DATA ROUTER

A data router shall not be required in specified data rack.

RACK MOUNT COMPUTER SERVER

A server computer shall not be required in specified data rack.

Wi-Fi NETWORK

A Wi-Fi network shall not be required on completed unit.

WIDE AREA NETWORK (WAN)

No satellite Wide Area Network (WAN) Internet connection shall be required on completed unit.

COMPUTERS

No PC or desktop style computer(s) shall be required on completed unit.

COMPUTERS

One (1) laptop style computer(s) shall be provided by Riverside County Fire Department and installed by contractor on completed unit.

Unit shall be complete and fully operational, including all required cabling, 120 volt AC wiring, and cable connections. All paperwork and software provided with purchased unit shall be provided in a plastic sleeve attached to unit when delivered.

INTERNET CONNECTION

DATA ROUTER CELLULAR

A cellular router shall be provided and installed on shelf or specified data rack for a Sprint, Verizon, Bell, or Telus cellular network and connected to the on-board network system.

Contractor shall provide only the basic configuration and programming necessary for system operations and is not responsible for integration with Riverside County Fire Department owned systems.

Any cellular and Wi-Fi antennas shall be located so that they do not interfere with operation of other roof mounted equipment.

All service and activation fees shall be the responsibility of the Riverside County Fire Department and activated at vendors location to verify system operation.

AUDIO SYSTEM

TELEPHONE SYSTEM

No telephone system shall be required on completed unit.

VIDEO SYSTEM

EXTERIOR VIDEO SYSTEM

No exterior body mounted video monitoring system shall be required on completed unit.

INTERIOR VIDEO SYSTEM

No interior wall or ceiling mounted video monitoring system shall be required on completed unit.

TV SATELLITE ANTENNA

Riverside County Fire Department

One (1) KVH Trac Vision model RV1 (or equal) "In-Motion" satellite receiver shall be provided on roof of apparatus body. This satellite receiver is designed exclusively for mobile users (RV's, boats, buses). The KVH Trac Vision RV1 is 13.3" Dia. x 13.5" Dia, and weighs 8 pounds. The RV1 satellite receiver is equipped with an automatic controller so that the antenna automatically aims at the satellite. This automatic acquiring model is also designed to receive HD DirecTV or Dish networks.

The satellite shall be located so that it does not interfere with operation of other roof mounted equipment.

Satellite dish shall be provided with a single LNB and wired so that only one (1) satellite receiver can be used with system DirecTV or Dish network.

All service and activation fees shall be the responsibility of the Riverside County Fire Department and activated at vendors location to verify system operation prior to delivery.

SATELLITE HD TV RECEIVER

One (1) DirecTV or Dish satellite HD TV receiver shall be provided and installed in data rack or cabinet on the completed unit.

Units shall be complete and fully operational, including all required cabling, 120 volt AC wiring, and cable connections. All paperwork and software provided with purchased unit shall be provided in a plastic sleeve attached to unit when delivered.

Receivers shall be wired to the audio/video control system, if specified.

LCD VIDEO DISPLAYS

Two (2) Samsung 32" flat panel, 4 Series (or equal) LED commercial grade, display(s) shall be provided and installed on completed unit.

One (1) located on front wall in the lab
One (1) located on the inboard face of the comm cabinet. (To match pervious unit)

Inputs/Outputs:
- (**3**) HDMI
- (1) USB
- (1) Component
- (1) Composite In (AV)
- (1) RF In (Terrestrial/Cable Input)
- (1) RS232C
- (1) Digital Audio Out (Optical)

Display(s) shall be complete and fully operational, including all miscellaneous coax or CAT 6 cable, HDMI to CAT6 extenders (if required), 120 volt AC wiring, and cable connections.

MONITOR MOUNT

Specified monitor(s) shall be mounted to wall using a heavy duty mount with adjustable tilt for ideal viewing. Wall mount bracket shall support TVs with VESA mounts.

SMART BOARD INTERACTIVE DISPLAY

Riverside County Fire Department

Two (2) SMART Board 6055 (or equal) interactive flat panel using a LED 55" LCD flat screen monitor shall be provided and wall mounted on completed vehicle.

one (1) will be located in Cab Streetside wall
One (1) will be located in C2.

The SMART Board® 6055 Pro interactive display with iQ is the hub of your meeting room. PC-free embedded computing provides one-touch access to collaborative tools, including a whiteboard, wireless screen sharing and a web browser. There's no need for wires, cables or manual software and firmware updates. The 55" 4K ultra-high-definition LED display provides optimal image clarity and wide viewing angles. With the Pen ID™ feature, you can assign different appearances to the two pens and write or draw over any application in digital ink. Object Awareness™ allows you to perform mouse functions with your finger, write in digital ink with the pen, and erase with your palm or eraser—all without switching tools or modes. You can use a variety of gestures in applications, and two users can write or draw at the same time.

The unit shall be approximately 50 3/4" wide × 33 5/8" high × 4 3/4" deep, and weigh 104 lbs.

In order to make the SMART Board operational it must be connected to at least one (1) on-board computer to be determined by Riverside County Fire Department. This computer shall be accessed by a provided wireless keyboard, and wireless mouse.

The SMART Board system shall be connected to optional matrix switcher if specified, and installed to view signals from all on-board audio/video equipment, and the computer network system.

MONITOR MOUNT

Specified monitor(s) shall be mounted to wall using a heavy duty mount with adjustable tilt for ideal viewing. Wall mount bracket shall support TVs with VESA mounts.

VIDEO/AUDIO RECORDER

No video/audio recording system shall be required on completed unit.

RADIO AND COMMUNICATION SYSTEM

SUPPLIED RADIOS

All radios and any necessary face plates, cabling, and antennas shall be provided and installed by **RCFD after delivery.** Contractor shall provide only the proper 12 VDC power and grounding for each radio location.

SEVEN (7) POSITION ANTENNA RAIL

One (1) radio antenna rail(s) shall be provided and installed on roof of vehicle. Each rail shall be constructed of aluminum, forming a two piece box design. The top section shall be removable for easy access to the individual antenna wiring. Seven (7) antenna bases shall be provided and installed in each rail. Each antenna base shall include enough cable to reach radio location plus a service loop of at least 10' of LMR195 flexible communications cable. The antenna wiring shall enter the vehicle roof at a single point under the end of the rail. The end of each radio antenna shall be routed to radio mounting locations, or as determined by the Riverside County Fire Department.

Due to the various configurations of antennas, the contractor shall provide the antenna base only, and Riverside County Fire Department shall provide the antennas, unless radios are specified with completed vehicle.

Antenna rail will be painted to match the exterior color of the chassis.

Riverside County Fire Department

No Radio Interoperability

WEATHER SYSTEM

NOTE: Will be the newest model supplied on unit.

There shall be one (1) WeatherPak® Response 1, UHF radio weather system provided and installed on completed unit with the following features;

- Measures wind speed/direction, air temperature, relative humidity, and barometric pressure
- Most rugged, reliable emergency weather station in the world
- Set up and reporting data in less than 60 seconds
- Impervious to airborne chemicals and designed to be deployed directly in hot zones.
- SmartDetect firmware automatically detects and displays data from up to twenty additional WEATHERPAK®s within range
- Automatically updates *CAMEO®/ALOHA® and other chemical plume modeling software
- WEATHERPAK® will survive a 6-foot (1.8 m) drop to concrete and withstand a decontamination rinse
- Built-in compass automatically aligns to True North
- Data is transmitted via radio (UHF or Spread Spectrum) to the plume model.

System Components:

- WEATHERPAK® Electronics with Microprocessor, EMI Protection, Heavy-Duty Mil-Spec Waterproof Housing.
- Sensor: Electronic Compass Automatically Aligns System To True North.
- Sensor: Wind Speed/ Direction Monitor – Ultrasonic “No-Moving-Parts”
- Sensor: Air Temperature/ Relative Humidity
- Sensor: Barometric Pressure
- Sensor: GPS – Trimble Navigation
- Software: SmartDetect™ multiple Weatherpak detection and display software.
- Tripod: 3 Meter, Heavy-Duty Aluminum, KamLock Quick Release, 10 D-Cell Batteries and Carry Bag
- Radio: 2W UHF Radio Transmitter, Range 5-7 Miles “Line-Of-Sight”
- Receiver/ Display: UHF Receiver, 10.1” LCD PC Panel Display W/Touch Screen, Serial, USB and Ethernet Data-Out and Cables.
- ABS Carry-Case: Hard-Sided Triangular Case for WEATHERPAK® - Custom Cut Foam Inserts
- WEATHERPAK® Vehicle Adapter- (17 pin): KamLock Quick Release with 25' Cable – Adapter that allows a WEATHERPAK® to be mounted on tower or stanchion. Terminates in male 1.5” NPT.

WEATHER SYSTEM MOUNTING

The weather system shall be mounted on a Fire Research model 530 series side mount push up telescopic pole. The pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 2 3/4" offset. Pole shall be supplied with hazard switch option and wired to door ajar circuit to warn when pole is in the up position. The weather system quick release wiring connector shall be located near pole location. Overall length with Weatherpack mounted unit is approx. 90".
CAMERA/MAST SYSTEM

CAMERA MAST SYSTEM

No camera and mast system shall be required on completed unit.

PHONE AND NETWORK CABLING STANDARDS

Riverside County Fire Department

If a telephone or fax machine is specified it will be connected to the central phone system from the RJ-11 wall jacks and wired through to the data rack or technical cabinet using yellow Category 6, 4 pair twisted copper cabling with yellow boot ends.

If a computer network is specified it will be connected to the network switch location, if specified from the RJ-45 wall jacks wired through to the data rack or technical cabinet using blue Category 6, 4 pair twisted copper cabling with blue boot ends. The pin pair assignments will be based on the T568B standard configuration. The termination ends in shall be RJ-45 male ends and connected to the network switch.

Only Category 6, 4 pair twisted copper cable shall be used for all computer cabling for improved transmission performance and superior immunity from external noise. All wiring shall be installed to Institute of Electrical and Electronics Engineers (IEEE) 802 standards.

All Category 6 cable must be properly installed and terminated to meet specifications. Incorrect installation practices include kinking or bending the cable too tightly will not be allowed. The cable bend radius should be no less than 4 times the outer diameter of the cable. Incorrect termination practices include untwisting the wire pairs or stripping the outer jacket back too far will not be allowed. When used for 10/100/1000 BASE-T, the maximum allowed length of a Category 6 cable is 100 meters (330 ft). All cabling shall be properly labeled at both termination ends for proper identification in future.

The running of Category 6 cabling in the same loom with any VAC wiring will not be allowed.

WIRING CHANNELS

Minimum 4" x 4" wiring channels shall be provided directly below the desk tops along the outside walls for computer, radio, and communications wiring. The top of desk tops shall have minimum 3" diameter openings that drop directly into wiring channel. The wiring channels shall have openings for future wiring installation and access. The wiring channels shall run as direct as possible to the data rack or technical cabinet location with several cross overs provided in roof structure for running wiring across body.

EQUIPMENT PAYLOAD WEIGHT ALLOWANCE

In compliance with NFPA 1901 standards, the special service vehicle shall be designed for an equipment loading allowance of 10,000 lbs. of Riverside County Fire Department provided equipment based on a 60,001 pound and up gross vehicle weight rating.

EQUIPMENT

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

- One (1) container of assorted stainless steel nuts, bolts, screws and washers used in the construction of the apparatus shall be provided with the completed apparatus.
- There shall be two (2) Zico AC-32, NFPA approved aluminum wheel chocks provided for 32" diameter tires that together will hold the vehicle when loaded to its GVWR or GCWR, on a hard surface with a 20% grade, with the transmission in neutral, and the parking brake released.
  - The wheel chock(s) shall be mounted on the apparatus, **Location determined at Final Inspection.**
- One (1) Little Giant model 1AA-17, 15' "A" frame type aluminum combination ladder(s) shall be provided with the completed unit. Folded size is 55" x 25" x 9", and weigh 45 pounds.
  - The ladder(s) shall be **SHIPPED LOOSE**.

Riverside County Fire Department

Two (2) Yellow Pelican 9440 LED Remote Area flashlight(s) with shoulder strap shall be provided with 5,300 lumen output and 8 hour run time. Each flashlight shall be yellow in color and have a 12 volt DC charger and vehicle mount kit. Deployed, the mast extends to 7 feet high.

- Flashlight(s) shall be the responsibility of Riverside County Fire Department after delivery of completed apparatus.

REMAINING NFPA MINOR EQUIPMENT BY PURCHASER

All other minor equipment not specified above, but required by NFPA 1901 for special service vehicles, section 10.9.3 shall be supplied and mounted by Riverside County Fire Department before the unit is placed in emergency service.