

**Fastlane Emergency Vehicles Demo 18**

**Purcellville, VA**

**DETAILED SPECIFICATION PACKAGE**

**2015 CHEVROLET TAHOE SSV**

**Intelligent Command**

## 1 REQUESTER INFORMATION

Requester's Name: Fastlane Emergency Vehicles Demo 18  
Address: 37241 East Richardson Ln  
City: Purcellville  
State: VA  
Zip: 20132

Requestor Contact Name: Sean Swanson  
Phone Number: 703-555-1212

## 2 GENERAL SPECIFICATIONS

### 2.1 **BIDDER INSTRUCTIONS**

The following specifications describe a new specialty Intelligent Command vehicle that is expected to be acquired by this purchaser. The specifications describe the needs in chassis configuration (if not supplied by purchaser) and conversion design. A professional, state of the art conversion is desired. However, manufacturers or conversion companies that utilize prototype equipment or manufacturing processes will not be considered. This history shall be supported per the following reference section.

Please note that the following specifications represent minimum general terms or requirements. While it is not the intent of this purchaser to preclude any qualified bidder from submitting a proposal it must be clear that any bidder deviating in any substantial manner from these specifications will be rejected as being non-compliant.

Finally, manufacturers or dealers for manufacturers submitting bids shall include the following information with their proposal:

#### 2.1.1 MINIMUM REQUIRED STANDARDS

The highest degree of quality materials and building processes is required for the Paramedic Response vehicle proposed. At a minimum, each manufacturer being proposed must meet all current safety and design guidelines set forth by the Society of Automotive Engineers (SAE). The proposal must also result in the completion of an emergency response vehicle that complies with all of the requirements for emergency response vehicles as set for by the National Highway and Transportation Safety Administration (NHTSA) and the United State Department of Transportation (USDOT).

#### 2.1.2 PROPOSAL COMPLETION PROCESS

Some sections in this specification packaged require a response from the bidder. In order to evaluate all proposals these responses must be consistent and legible. Therefore, any areas that are to be completed by the bidder must be filled out in typewritten form.

Bids that are submitted with hand written responses shall be considered non-responsive and shall be automatically rejected.

**2.1.3 SINGLE SOURCE MANUFACTURER**

A manufacturer is desired that performs all aspects of manufacturing the major components of the conversion (excluding the chassis). Major components are defined as cabinetry, consoles, primary wiring harnesses, electrical system, external equipment installations and lighting/signaling package installations.

The purpose of this single source requirement is to simplify the responsibility of warranty coverage for the finished product. Bidders who out-source the cabinetry, consoles, primary wiring harnesses, electrical systems, external equipment installations and/or lighting/signaling package installations will be considered as non-responsive and will therefore be rejected.

ABOVE REQUIREMENTS MET: Yes \_\_\_\_\_ No \_\_\_\_\_  
 Components Manufacturer (by company name): \_\_\_\_\_  
 Cabinetry: \_\_\_\_\_  
 Consoles: \_\_\_\_\_  
 Bidder Added Electrical System: \_\_\_\_\_

**2.2 QUOTATION**

The overall quotation shall include a firm price for these specifications. The quotation shall also include a specific delivery date based on a number of calendar days following awarding of contract. The model year of both the chassis and conversion shall be designated.

**2.4 WARRANTY**

The proposal presented by the bidder must have all warranties that are required in the following detailed specification. "LIFETIME WARRANTIES" shall be deemed ambiguous and unacceptable due to their lack of definition as to nature and duration, and therefore rejected. All warranties must have specific time durations and define a warranty on specific components and aspects of the manufacturing process. The minimum acceptable warranty period required is noted below. In the line provided, the bidder shall note the term of the warranty that applies to the manufacturer being proposed.

CABINETY & CONSOLE WARRANTY: 3 YEARS/36,000 MILES  
 Proposed Warranty Term: \_\_\_\_\_ Year(s) \_\_\_\_\_ Miles  
 ELECTRICAL WARRANTY: 6 YEARS/72,000 MILES  
 Proposed Warranty Term: \_\_\_\_\_ Year(s) \_\_\_\_\_ Miles  
 CONVERSION/INSTALL WARRANTY: 3 YEARS/36,000 MILES  
 Proposed Warranty Term: \_\_\_\_\_ Year(s) \_\_\_\_\_ Miles  
 GRAPHICS/STRIPING/LETTERING WARRANTY: 3 YEARS/36,000 MILES  
 Proposed Warranty Term: \_\_\_\_\_ Year(s) \_\_\_\_\_ Miles  
 BIDDER WARRANTIES INCLUDED WITH PROPOSAL: Yes \_\_\_\_\_ No \_\_\_\_\_

**2.5 SERVICE**

Service is considered a major factor in awarding this proposal. Convenience and experience shall be important factors in defining acceptable service. A service facility within a radius as described below will be required. Personnel performing the service shall be trained by the manufacturer, with emphasis in the area of electrical service. In order to evaluate the proposed service facility the bidder is required to fill out the following information in the space provided:

Radius from Purchaser not to be more than 100 miles.

PROPOSED RADIUS FROM PURCHASER: \_\_\_\_\_ MILES

Facility Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_

Training Qualifications & Description: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**2.6 ENGINEERING SUPPORT**

2.6.1

Due to the complexity and custom nature of these vehicles, proposals will only be accepted from manufacturers that utilize well-defined engineering practices. Computer Aided Design (CAD) of both the rear cabinetry as well as the front control console layout will be mandatory. The reason is to assure that proposals for this vehicle will indeed meet the requirements of this purchaser.

To ensure this engineering support, each bidder must present with their proposal; full scale CAD drawings of both the rear cabinetry and front control console layout on a minimum layout size of B-size or larger (11X17). Failure to provide these drawings will result in the rejection of the bidder's proposal.

2.6.2

Electrical performance is often to be the majority of service issues associated after delivery of this type of vehicle. For that reason proposals will only be accepted from manufacturers that perform an electrical performance analysis at time of bid. This analysis shall be based on the items to be installed by manufacturer as listed within this spec. This analysis shall include the total amount (in amperes) of added items to the vehicle, included in this conversion. A comparison between the total alternator output capacity and total added items (in amperes) shall be included in this analysis. From this a total, a percentage of usage (of reserve) must be calculated and cannot be 75% of alternator capacity. If more than 75% of alternator capacity is used, manufacturer must list (as options if necessary) any recommended performance upgrades they plan to make to correct this deficit. Failure to provide this analysis will result in the rejection of the bidder's proposal.

**2.7 SAMPLE PARTS REQUIREMENTS**

In order to compare construction techniques as well as the quality of the parts being used in the proposed manufacturing process, each bidder must submit at the time of bid opening, the following items used throughout their proposed construction process and as defined in the following specification requirements. All items shall be returned to bidder after bid has been awarded:

- (1) 2"X3" Sample of cabinetry finish specified within this document (i.e.: Formica, Polybuild, Carpet)
- (1) 2"X3" Sample of console covering specified within this document
- (1) 5"X7" front console cutout for radio and control equipment showing cutout technique, finish and fit
- (1) 8" section of main electrical harness

**2.8 REFERENCES**

The proven durability and reliability of this product is of the utmost concern. To this end, each bidder submitting a proposal must furnish references consisting of in-service units of similar chassis make and model as well as conversion process being proposed. In addition, the electrical design on the vehicle being proposed must be field proven. Prototype equipment or processes will not be considered. Therefore, all references listed below must include an electrical system that has been installed for a minimum of two (2) years.

All references shall include owner, address, contact with phone number and model owned. A minimum of three (3) references shall be furnished:

1. Reference: \_\_\_\_\_  
Location: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Phone Number: \_\_\_\_\_  
Model Owned: \_\_\_\_\_ Year: \_\_\_\_\_

2. Reference: \_\_\_\_\_  
Location: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Phone Number: \_\_\_\_\_  
Model Owned: \_\_\_\_\_ Year: \_\_\_\_\_

3. Reference: \_\_\_\_\_  
Location: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Phone Number: \_\_\_\_\_  
Model Owned: \_\_\_\_\_ Year: \_\_\_\_\_

Additional/Reference List Attached: \_\_\_\_\_

**2.9 LIABILITY**

The bidder shall defend, indemnify, and save harmless the purchaser and its officials from all claims, demands, payments, suits, actions, recoveries, and judgments of every description, whether or not well founded in law, brought or recovered against it, by reason of any act or omission of said bidder, his agents or employees, in the execution of the contract or in consequence of insufficient protection or for the use of any patented invention by said bidder, and a sum sufficient to cover aforesaid claims may be retained by the purchaser from money due or to become due to the bidder under this contract, until such claims shall have been discharged or satisfactorily secured.

Each bidder must furnish a Certificate of Insurance showing aggregate total of insurance that shall not be less than one million dollars (\$1,000,000).

CERTIFICATE OF INSURANCE INCLUDED WITH PROPOSAL: Yes \_\_\_\_\_ No \_\_\_\_\_

In addition, the bidder is to assume risk of loss to the vehicle herein specified until the vehicle is delivered to this purchaser.

**2.10 INSPECTION TRIP**

An inspection trip must be provided by the bidder. The inspection trip shall include all room and board for one day/night stay. The inspection trip shall be during the latter stages of the manufacturing process or at the time of delivery of said vehicle. The following number of persons shall be provided for:

Number of Inspection Persons: 3

INSPECTION TRIP INCLUDED IN THE PROPOSAL PRICE: Yes \_\_\_\_\_ No \_\_\_\_\_

**2.11 PAYMENT**

Payment shall be made on delivery of completed vehicle or upon completion of all work contracted for (whichever comes later) and performed to the satisfaction of the purchaser. Should the bidder offer purchase price reductions as an incentive for pre or partial payments, these offers should be included in the bid with all details and conditions of the payment / price reduction clearly explained.

**2.12 DELIVERY PROCESS**

The vehicle shall be inspected and picked-up by requester at the factory of the bidder. The purchaser has the right to reject the vehicle if it does not conform to the satisfaction of the purchaser as set forth in the contract.

**2.13 PRICES AND TAX**

All prices quoted shall be for a definite fixed price unless otherwise specified. Prices shall exclude Federal, State and other taxes to the extent that this purchaser is exempt. All pricing shall be F.O.B.:

F.O.B.: DEPARTMENT ADDRESS

**2.14 SPECIFICATION DESIGN**

The purchaser created the following specifications in order to best describe a need. However, it is not the intent of this purchaser to exclude any manufacturer from bidding on these specifications. Exceptions should be listed per the following BID COMPLETION requirements.

**2.15 PROPOSAL SUBMISSION REQUIREMENTS**

2.15.1 All proposals shall be submitted to:

Purchasing Entity: Fastlane Emergency Vehicles Demo 18  
Address: 37241 East Richardson Ln  
City: Purcellville State: VA Zip: 20132  
Attention of: Sean Swanson

2.15.2 All proposals shall be marked on the envelope as follows:  
"Intelligent Command VEHICLE"

2.15.3 A MINIMUM OF THREE (3) COPIES OF THE PROPOSAL AND ALL REQUIRED DRAWINGS SHALL BE SUBMITTED.

All proposals shall be submitted in a three ring binder or bound folder. In order to facilitate evaluation, the package shall be divided by header in to the following minimum sections:

PROPOSAL: Bidder's proposal showing product bid, model, year, price and delivery date and manufacturers own specification in order as presented in the request. Under no circumstances shall bidder simply photo copy this request and submit as his/her own specifications.

SPECIFICATIONS: This bid package, with all answers provided (along with any itemized exceptions), **the manufacturer's own specification**, and an electrical performance evaluation. Do not detach or omit these sheets.

DESIGN: CAD generated drawings of rear cabinetry and front control console layout being proposed.

COMPANY INFORMATION: Copy of manufacturer's certificate of insurance, business licenses and detailed company history.

WARRANTY: Complete written text of conversion, electrical and workmanship warranty.

## **2.16 INFORMATION TO BE SUBMITTED WITH PROPOSAL**

The information requested in the bid package must be furnished in full. Any bidder not completing this proposal or not furnishing any required information will not be considered. If a bidder cannot furnish a material or fabrication process, that inability must be designated in the Specification Evaluation Section of the document. If a substitution is being proposed, whether it EXCEEDS or TAKES EXCEPTION to these specifications, the bidder must supply technical data supporting this substitution. This purchaser has the option to require samples of any deviating material to be furnished upon request for evaluation. The data will be used to evaluate the bid.

NOTE: Failure to complete the Evaluation Section will result in forfeiture of the submitted bid.

## **2.17 DIRECTIONS FOR COMPLETING "YES" AND "NO" LINES**

A question labeled "WILL FURNISH SECTION AS WRITTEN" follows each numbered section throughout this specification document.

A "Yes \_\_\_\_\_ No \_\_\_\_\_" response then follows each query.

If the bidder can meet the reference condition, the "Yes" column must be checked with an **X**. A column so marked represents that the bidder will furnish the exact material and/or fabrication process specified in the section.

If the bidder cannot furnish the material and/or fabrication process specified in the section, the "No" column should be marked with an **X** and so marked represents that the bidder will furnish a substitute process or material. This column shall be marked, whether the substitution exceeds or takes exception to the specified requirement. If the "No" column is marked, engineering data must be provided showing that the substitution is as good or superior to the item specified.

At the end of the specification, a "Yes/No Evaluation Sheet" has been provided. If any "No" columns have been marked with an **X**, a complete explanation must be provided in this section. Grouping of deviations will not be acceptable. Each and every deviation must be documented and must include:

- SECTION HEADER NAME
- EXPLANATION OF DEVIATION

Note: As required above, all responses must be in typewritten form and must be located in the space provided within the following specifications. BIDS FAILING TO MEET THIS REQUIREMENT WILL BE REJECTED.

**2.18 EXCEPTIONS TO SPECIFICATIONS**

Exceptions to these specifications shall be noted below. All exceptions taken shall be recorded per the guidelines defined in the previous section. Each exception shall be noted by page number and section number/header. If additional space is required for exceptions, then the bidder shall use additional paper as

Page #: \_\_\_\_\_  
Section Number: \_\_\_\_\_  
Header: \_\_\_\_\_  
Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Page #: \_\_\_\_\_  
Section Number: \_\_\_\_\_  
Header: \_\_\_\_\_  
Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Page #: \_\_\_\_\_  
Section Number: \_\_\_\_\_  
Header: \_\_\_\_\_  
Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



### 3 CHASSIS SPECIFICATIONS

The vehicle a 2015 CHEVROLET TAHOE SSV shall be supplied by bidder.

This vehicle shall be comprised of only the following options, codes, or packages:

CK15706 Chevrolet Tahoe 4WD 4dr Commercial

To Include the following options:

SUSPENSION PKG  
ZW7 SUSPENSION PACKAGE, PREMIUM SMOOTH RIDE (STD)

EMISSIONS  
NE1 EMISSIONS, CONNECTICUT, DELAWARE, MAINE, MARYLAND,  
MASSACHUSETTS, NEW JERSEY, NEW YORK, OREGON,  
PENNSYLVANIA, RHODE ISLAND, VERMONT AND WASHINGTON  
STATE REQUIREMENTS

ENGINE  
L83 ENGINE, 5.3L ECOTEC3 V8 WITH ACTIVE FUEL MANAGEMENT,  
DIRECT INJECTION AND VARIABLE VALVE TIMING

TRANSMISSION  
MYC TRANSMISSION, 6-SPEED AUTOMATIC, ELECTRONICALLY  
CONTROLLED

AXLE  
GU4 REAR AXLE, 3.08 RATIO (STD)

PREFERRED EQUIPMENT GROUP  
1FL COMMERCIAL PREFERRED EQUIPMENT GROUP

WHEEL TYPE  
PZX WHEELS, 18" X 8.5" (45.7 CM X 21.6 CM) ALUMINUM WITH HIGH POLISHED FINISH

TIRES  
RKX TIRES, P265/65R18 ALL-SEASON, BLACKWALL

SPARE TIRE  
RC4 TIRE, SPARE P265/70R17 ALL-SEASON, BLACKWALL

PAINT SCHEME  
ZY1 PAINT SCHEME, SOLID APPLICATION

PAINT  
GAZ SUMMIT WHITE

SEAT TYPE  
A95 SEATING, FRONT BUCKET WITH PREMIUM CLOTH passenger seat  
includes power fore/aft, power recline and Power lumbar, 10-way power  
driver seat includes 6-way power cushion, 2-way power lumbar control  
and power recline

SEAT TRIM  
H0U JET BLACK, CLOTH SEAT TRIM

RADIO  
IO3 AUDIO SYSTEM, AM/FM STEREO WITH CD PLAYER AND AUXILIARY

INPUT JACK

ADDITIONAL EQUIPMENT

5W4 IDENTIFIER FOR SPECIAL SERVICE VEHICLE

PCW DRIVER ALERT PACKAGE

K05 ENGINE BLOCK HEATER

NZZ FRONT UNDERBODY SHIELD

G80 DIFFERENTIAL, HEAVY-DUTY LOCKING REAR

K4B BATTERY, AUXILIARY, 730 CCA

KW7 ALTERNATOR, 170 AMPS, HIGH OUTPUT

\_\_\_ LUGGAGE RACK, DELETE

AKO GLASS, DEEP-TINTED

AKX WINDSHIELD, SOLAR ABSORBING, SHADED UPPER

AKK WINDSHIELD STYLE, ACOUSTIC LAMINATED GLASS

\_\_\_ EXTERIOR ORNAMENTATION DELETE

\_\_\_ DOOR HANDLES, BLACK

ATD SEAT DELETE, THIRD ROW PASSENGER

D07 CONSOLE, FLOOR

NP5 STEERING WHEEL, LEATHER-WRAPPED

BTV REMOTE VEHICLE START

\_\_\_ KEY, 2-SIDED

JF4 PEDALS, POWER-ADJUSTABLE FOR ACCELERATOR AND BRAKE

\_\_\_ THEFT-DETERRENT SYSTEM, VEHICLE, PASS-KEY III

AYQ AIR BAGS, FRONTAL AND SIDE-IMPACT FOR DRIVER AND FRONT PASSENGER

UE0 ONSTAR DELETE

UEU FORWARD COLLISION ALERT SENSOR INDICATOR

UFL LANE DEPARTURE WARNING AND SAFETY ALERT SEAT

\_\_\_ SAFETY BELTS, 3-POINT, DRIVER AND FRONT PASSENGER IN ALL SEATING POSITIONS

5T5 SEATS, 2ND AND 3RD ROW VINYL WITH FRONT CLOTH SEATS

**\*\*NOTICE: THIS VEHICLE AND VEHICLE PRICING IS FOR GOVERNMENT, MUNICIPAL AND VOLUNTEER AGENCIES ONLY. COMMERCIAL, PRIVATE BUSINESSES OR INDIVIDUALS ADD BACK \$8000 TO THIS PRICING.\*\***

## 4 CONVERSION SPECIFICATIONS

### 4.1 **ELECTRICAL SYSTEM**

Electrical systems and components added by conversion companies oftentimes prove to be the most troublesome and failure-prone aspects of the vehicle. A professionally engineered and technically superior electrical system must be utilized, enhancing the usefulness and durability of the final product. The system must be simple in design, enabling its use and understanding by the vast majority of potential users. Troubleshooting, repair and replacement must be quick and simple. Parts must be readily available and of common varieties. Wiring and other components must be rated to carry 125% of the potential load. To assure that the aforementioned objectives are met, the following minimum electrical system design is required:

#### 4.1.1 CENTRAL ELECTRICAL DISTRIBUTION CENTER:

The electrical system added by the conversion contractor shall feature one centralized electrical distribution center, from which all typical loads are switched. The actual distribution of power will occur on a printed circuit board(s), which is standard and interchangeable with other like conversions of the same manufacturer. Distribution panels that are not standard in design and that are not readily interchangeable will not be considered. In addition, bidders who design and build vehicles with multiple locations for electrical devices shall not be considered.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.2 SOLID-STATE CONTROL:

Given the problematic nature of mechanical and moving part devices such as relays, breakers and high-amperage switches all controls of any converter added load on the vehicle must be controlled via solid-state MOSFET technology. This solid-state control shall be in the form of low resistance FETs which shall all be controlled by one central processor. Functions such as on/off states, flashing, load management, etc shall be controlled through a programmable processor and switched at the load level using solid-state devices.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.3 MULTIPLEXED CONTROLS:

All vehicles on which conversions of this type are built are now using a form of multiplex communications and control, namely controller area network bus (or CAN-BUS). Either Society of Automotive Engineers (SAE) standard Article J1939 or similar CAN-BUS protocol is now utilized by all major vehicle manufacturers. This purchaser requires the same technology for the converter added electrical system. A standardized electrical control and wiring system is required that shall be used in all converter modified vehicles. All components in the added electrical system must be standard and common to all vehicles modified by converter. These parts must be readily available and interchangeable between all similar models offered. This electrical system must be owned and/or controlled by the converter in order to insure part availability and service support. The use of "off-the-shelf" systems or switch boxes shall be considered non-responsive as it could impact the ability for this purchaser to obtain service or parts in the future from the converter. Since solid-state and logic controlled technology is commonly available, widely used across the industry and not propriety to any one manufacturer; and since this technology has been proven to be more reliable with increased benefits, a blanket exception or "clarification" regarding the electrical specifications contain herein will not be acceptable and will cause automatic rejection of the bid.

All added loads shall be wired (in a similar manner to all vehicles modified by converter) to central distribution module in the vehicle. This module must have the ability to control a minimum of twenty-eight (24) high amperage, 6A loads and four (4) low amperage or logic, 2A loads. This system shall be capable of controlling up to 40A of total power. All functionality such as flashing, turn-on/turn-off, timer circuits and load management shall be controlled from the actual output module and not additional flashers or control boxes. The system shall further have sixteen (16) discrete logic inputs for interface to vehicle. Such signals as park, reverse, lowbeam, highbeam, brake, etc shall tie into the system via these inputs. All modules shall communicate with each other on a common network drop via 2-wire CAN-BUS harness and shall connect to the main CPU and control panel via a locking Deutsch style connector. All communication with displays, switch panels, additional input/output modules shall be achieved via this multiplex (communication) drop.

In addition, this system shall have a minimum of six (6) outputs capable of pulse width modulation (PWM) of its respective output down to a minimum of 1% of its full output. This shall allow for dimming or reduction of power to that output for such things as soft-start, light dimming and motor controls. This feature shall be software controlled and selectable by the installer.

Under no circumstances may the operation of the central processing unit for the input or output controls be based upon the use of mechanical relays. Relay based systems required higher amperage to operate and rely on mechanical contacts which arc and degrade during designed use, thus creating short duty cycles and decreased life for the vehicle electrical system. Relay based systems, due to those limited short life cycles shall be considered non-responsive and result in automatic rejection of the bid.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.4 INTEGRATED FUNCTIONALITY:

Conventional, mechanical controls rely upon multiple modules or devices to achieve complex switch and functions. With an increased number of parts comes increase chance of failure. For this reason, the purchaser of this vehicle requires all flashing, load management and control matrix decisions be controlled by one processor controlled module. The system must be able to control all functions such a flashing, load management, load cancel options, master circuit enable functions, etc. Bidders who use external, aftermarket flashers, load managers or control packs shall be deemed non-responsive and result in the automatic rejection of bid by requester.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.5 OUTPUT CIRCUIT PROTECTION:

This electrical system shall have special over-current detection features on all high side outputs that allows filtering an inrush current. When an output is turned ON, the inrush current should not exceed 2.5 times the maximum current value during 500ms, 2.125 times between 500 and 750 ms and 1.75 times between 750 and 1000 ms. After 1000ms, the current should be stabilized and not exceed 1.25 times the maximum current value. Otherwise, an over current is detected.

In the case of a short circuit, when the inrush current exceeds 2.5 times maximum current value, the smart output devices disables itself instantaneously and then the over current detection feature will not be involved.

When an over-current is detected on an output, the output is turned off to protect the system and the wiring. The system will attempt periodically to resume from the over-current condition by allowing the output to be turned on once in a while. The period time between attempts starts from 5s and increases by 0.5s each time the device remains in over-current until reaching a maximum 30s time base period. At this point, the output is activated once per 30s as long as the current flowing through the output exceeds the device limitation keeping the output in the over-current condition. That periodic attempt procedure allows the output to resume when the short circuit is removed.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.6 AUTOMATIC LOAD MANAGEMENT:

The bidder shall include built-in programmable load management in to the main system CPU. The addition of aftermarket, non-integrated load managers which are not laptop programmable shall be considered non-responsive and shall be rejected by requester.

In order to allow the user of this vehicle to focus on his/her job and not the condition of this proposed vehicle, each electrical system shall contain the ability to automatically manage all loads controlled by the system and control panels. The system must continually monitor the vehicle's charging state while sitting (in park) "on the scene". The system shall have the ability to automatically shut-down any of the outputs controlled by the system. The priority of these loads as to which order or whether they shed shall be programmable and easily changed without any mechanical interface with electrical components via a software interface and any standard personal computer.

If a voltage deficit condition continues for more than 90 seconds while the vehicle is parked the system shall begin to shed loads one-by-one (one load every 90-seconds) until the system voltage stabilizes at an acceptable (programmable) voltage level. During this deficit and while the load management is active, the system shall notify the user that this condition is present by displaying "LOAD SHED ACTIVE" on the front message control display.

Load management systems must be programmed through a microprocessor based logic and memory system rather than a series of mechanical relays. Systems that require manual activation of load management will not be acceptable. Once the deficit condition ceases to exist, the system must be capable of restarting any disabled circuit without any action required by driver. Further, ALL loads must return to normal operation when vehicle is taken out of park, regardless of voltage or load shed condition.

In addition to controlling all emergency warning devices, the main system CPU shall stay active at all times and draw not more than 14mA of current in sleep mode, while continuously monitoring all bidder added equipment. This shall include all items wired to battery hot such as flashlight chargers, portable radio chargers and the like. The main system shall also control any ignition switch items such as the siren amplifier, two-way radios, etc. such that functional programming control can be achieved.

The bidder is required to furnish a system that permits the end user, if he/she so desires, to determine prior to vehicle delivery the order and priority of each load to shed. The system must be designed such that future changes to load shed states or priority order be changed easily and without rewiring of the vehicle.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.7 BATTERY DRAIN PROTECTION:

The main electrical system shall continuously monitor ALL bidder added electrical devices, even when vehicle ignition is off. This unit can be set in a low consumption mode (sleep mode). In this mode, the module draws only 14 mA at 13.5V and can remain powered at all times. In sleep mode, this system shall continuously monitor the main and secondary CAN-BUS networks as well as several key inputs (ignition, shoreline, door open) to ensure the vehicle remains "ready for service". If at any time the system detects changes on these key inputs, the system shall "wake-up" and resume normal operations.

This battery drain protection shall serve to ensure all bidder added equipment (flashlights, laptops, portable radios, etc.) remains ready for service while maintaining the ability for the vehicle to start and respond at a moment's notice.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.8 OEM HEADLAMP FLASHER:

The main electrical system shall be capable of controlling both vehicle highbeam headlights. This control shall be in the form of normal OEM function when system is inactive and emergency flashing mode when front WIG-WAG key is pressed (if so programmed). The headlight flashing function shall stop and the highbeams shall steady burn if the OEM highbeam switch is engaged. Further, the flashing function shall not operate if the lowbeams (night-time operation) are on. All flashing functions, highbeam override functions and lowbeam cancel function shall be controlled and programmable through the main electrical system allowing this feature to be deactivated, easily after delivery.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.9 PRIMARY CONTROL PANEL:

A unitized, modular touchscreen control panel will control the electrical distribution center. This control panel is to be of a type common to all vehicles built by the bidder, such that it could be interchanged with a panel from a similar vehicle. The control panel shall interface with main I/O control module via a 2-wire CAN-BUS network cable using locking Deutsch style connector. At a size of 4.3" this bright TFT LCD screen and featured with a resistive touchscreen. This main touchscreen shall be of the embedded, open architecture platform designed for in-vehicle use. The entire unit is shall be IP67 rated allowing for external vehicle conditions including dirt, dust, moisture and allows for outdoor use.

For maximum flexibility, each control panel shall have programmable "soft switches" that shall be non-latching. All latching of load "on" shall be achieved through the system processor, allowing a single load to be switched from any control panel in the vehicle. If so desired, the system may be programmed such that any load may be controlled by multiple locations and have the ability to turn on or off from any switch panel in the vehicle. All associated virtual switches shall indicate the status of the activated load at each control panel (regardless of which switch was pressed).

The use of mechanical, current carrying non-unitized switch panels, particularly those that would require tools or diagrams to replace/repair is considered unacceptable and shall be rejected by requester.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.10 SYSTEM STATUS MESSAGE DISPLAY CENTER:

In addition to providing primary switch control, the front main control panel shall display

vital statistics about vehicle health and indicate status of several key areas of the vehicle. A minimum of the following information shall be displayed on this front control/display panel:

- Voltage status of the vehicle charging system
- Status of the shoreline (if vehicle is so equipped)
- Status of any emergency warning lights (either through an icon or alert)
- Status of any door or compartment door open on the vehicle
- Overall status of the system (display prominently any faults)

Finally, this display unit shall include an elapsed timer function to allow selected count-down functions to be used (see ELAPSED TIMER Section). This display shall be easily read during both daylight hours and in the dark.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.11 SECONDARY/REAR CONTROL PANEL:

There shall be included with this bid, a second control/display panel of matching specifications as the primary control display (see Section 4.1.9). This secondary touchscreen control and display shall be located at the rear of the vehicle for use at the back cabinet rear control center (RCC) panel during command or on-scene operations.

This secondary control panel shall afford the operator of all the same functions as the primary touchscreen control display.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.12 ELAPSED EVENT TIMER:

On the main (and secondary, if so equipped) control display touchscreen, there shall exist an elapsed timer or ground operations timer feature for timer reminder functions during typical fire ground and EMS operations. This timer shall provide for user selectable count down functions from 1 minute to 90 minutes. At the end of the user selected timeframe, the display shall visually and audibly alert the user that the time has elapsed, at which time another timer round can be set.

Due to space limitations and functionality, this requester is requiring the timer functions be built-in to the existing control displays. The addition of external clocks or timing devices shall be deemed unacceptable and shall be rejected by this requester.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.13 HOUR SERVICE METER:

The primary message display center shall include a cumulative hour meter function built-in. During standard power-up (ignition voltage sensed) the main display in the vehicle shall display the total elapsed service hours of the vehicle since delivery from bidder.

This meter shall be integrated in the primary display of the vehicle and shall have the ability to be calibrated, reset or adjusted through the back or circuit card portion of the device.

Due to space limitations and functionality, this requester is requiring the hour meter be built-in to the existing message displays. The addition of an external or separate hour meter device shall be deemed unacceptable and shall be rejected by this requester.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

**4.1.14 LOW AMPERAGE SWITCHING:**

All switches and touchscreens used on the primary & secondary switch panels shall be of a low amperage design. These switches send only an “on” or “off” signal to the electrical distribution center, thus minimizing the electrical burden placed upon the vehicle as well as improve efficiency by minimizing voltage drop. These switches shall draw no more than 10 mA each and shall be moisture proof, rated for not less than 5 million operations from the manufacturer. Furthermore, all switches shall be permanently soldered to a PC-board, eliminating the possibility of loose switch connections. Finally, under no circumstance is the use of circuit breaker switches or high amp switching considered acceptable, due to their bulk and inefficiency.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

**4.1.15 SWITCH "ON" INDICATION:**

All displays and virtual switches contained within the primary and secondary control panels shall feature individual bi-colored LED indicators that will indicate when a circuit has been turned “on”. During standby or “off” states each switch shall be backlit using a green LED. During active or “on” states, any switch with an associated active or “on” output shall be backlit or glow using a GREEN LED. Additionally, if the associated load for which the switch controls is shed by the integrated load management function, the red backlit indicator shall blink to indicate that the load has been shed.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

**4.1.16 USER-CHANGEABLE LEGENDS:**

Each display shall include programmable, custom virtual switch legends that can be configured via a simple XML file and uploaded to the system touchscreen display.

Engraved or vehicle specific legends are not acceptable, as they are not easily changed should the requester’s switching needs change. Instead, the legends will be separately and individually changeable, and the vehicle will be supplied to the requester with an assortment of spare legends for possible reconfiguration.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

**4.1.17 110V SHORELINE INDICATION:**

Due to the emergency response and readiness nature of this vehicle, each control display panel shall display the status of the 110V AC shoreline (if specified) when engaged. This message shall display either “SHORELINE ENGAGED” or via an icon that is clearly labeled, as well as display the battery voltage level of the entire system.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

**4.1.18 OEM INTERFACE:**

The electrical system shall interface with the vehicle via logic input taps or CAN-BUS message integration only. These taps shall draw NO current and only sense (maximum of 5mA) the signal state of the line.

Any tap which interfaces with the vehicle’s OEM wires shall be achieved using solder and heat shrink in accordance with body modifier standards. Each OEM wire shall be soldered to converter’s tap using electrical no-flux solder and covered by adhesive lined heat shrink tubing.



Under no circumstances shall the bidder use or recommend the use of Scotchlok or t-tap style connections nor the of tap senses that utilize relays coils or current drawing devices. Use of such components shall result in automatic rejection by requester.

To allow the maximum configuration and future feature expansion, the minimum vehicle signals to be tapped and wired to the main system board are:

Ignition, Start, Brake, Park, Reverse, Horn, Highbeam, Lowbeam, Left Turn Signal, Right Turn Signal and Rear Door Open

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.19 ELECTRICAL SUPPORT & DOCUMENTATION:

The entire system's functionality shall be programmable via a standard laptop/computer using a serial DB9 or USB connection. All features such as load shed priority, flash patterns, override keys, cancel keys, matrix switching must be programmable and easily changed without any wiring or connection changes.

The bidder must also provide a full vehicle manual, bound in a 3-ring binder or similar device to include the following:

1. Full Warranty Information
2. Special Care Instructions
3. Burn-In Report (charging system performance results)
4. All Added Equipment Manuals and Warranty Cards
5. Electrical System Operating Instruction Manual
6. Full set of wiring diagrams/schematics of ALL converter added electrical devices.
7. All Radio Communications Operating Instructions, etc.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.20 WIRING STANDARDS:

Wiring to be automotive type meeting or exceeding SAE J1128-GXL rated for minimum of +125 degrees centigrade. All wiring to be stamped with permanent, indelible marking describing "plain word" function not less than 6 inches apart for the entire length of the wire. Each run to be rated for 125% the specified ampacity of the connected load. All wires to be run in split corrugated, nylon loom with minimum temperature rating of +115 degrees Centigrade. Loomed harnesses to be wire tied to frame and chassis not greater than 16" apart. All high voltage lines such as strobe cables and harnesses to be shielded and in independent harness from all other wires. All pass through holes cut in body of vehicle where wire harnesses travel to have standard Heyco style bushings to protect from chaffing. All holes that pass to exterior of body to have approved sealing compound to seal wires from weather.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.21 CONNECTIONS AND TERMINATIONS:

All connections made within the body and outside the body, crimp style terminals with nylon insulation. Terminals must be crimped with approved tool specific to connector being used. All to be Delphi Weather Pack, sealed connector or equivalent and must protect against moisture, dirt and dust, minimum rating of -40 to 250 degrees Fahrenheit.

All ground connections made on chassis frame or body on remote appliances to utilize star (toothed) ring terminal and be coated from weather and corrosion with silicon or approved sealing compound. All connections made inside the engine compartment and

inside body are to utilize crimp style terminals with adhesive heat shrink over all connections.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.22 CUSTOM WIRE HARNESSSES:

The bidder will manufacture and install vehicle specific wiring harnesses. The nature of custom specialty vehicles dictates that "stock" or "standard" wiring harnesses are unacceptable. Every vehicle has different needs, different accessories and different intended uses. These harnesses will be engineered to best suit each particular vehicle, while minimizing interruption to OEM functions or unnecessary connections. In addition to the planned loads on the vehicle, each individual harness shall include, at a minimum, two (2) spare wires which shall be clearly marked with a circuit number and function. Further, harnesses must be protected with split-loom. Harness-wrap, tape and other protection methods are not acceptable.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.23 WHOLE VEHICLE CIRCUIT PROTECTION:

All electrical loads and appliances added by the conversion company shall be run through one master circuit breaker. This circuit breaker will be rated to handle all possible loads added to the vehicle, and will be located as close as practicable to the vehicle battery(s). The purpose of this device is not only to protect the vehicle in the case of catastrophic failure or collision, but also to enable all non-OEM accessories to be removed from power for service or maintenance. The circuit breaker will feature a manual power-disconnect "trip" button, as well as positive indication of its "tripped" status.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.24 CENTRAL FUSE LOCATION:

All loads not directly switched by the bidder added electrical system shall be circuit protected via ONE (1) central fuse block. This fuse block shall be located external to any console or cabinet and shall require no disassembly or tools to access. Further, each load connected shall include a circuit number and be associated with dissimilar loads for ease of trouble shooting. All wiring information shall be located in bidder supplied documentation as to circuit number, wire marking and location.

Given the nature of this vehicle's operations, and the critical nature of service to this requester, the use of hidden, buried or non-central fuse panels shall be deemed unacceptable and shall be rejected by requester. Further, there shall be no use of inline fusible links or additional fuses not centrally located at this one panel.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.1.25 STROBE AND COMMUNICATIONS HARNESSSES:

In the manufacture of custom wire harnesses, under no circumstance shall strobe cables be incorporated into harnesses containing other types of wires, thus minimizing the potential for annoying or harmful interference or RFI. Additionally, communications cables/antenna (e) will not be run in harnesses that could engender similar problems.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

## 4.2 **BUILD STANDARDS**

### 4.2.1 INSTALLATION ALL BODY LIGHTING & APPLIANCES:

All body lighting (if specified) shall be cut into the vehicle's body (if required) such that no

possibility of corrosion or finish damage is likely in later years of ownership. All holes cut into the body of the vehicle for mounting of any lighting or added appliance by bidder will be done using the following standards. All cuts must be sealed and primed with a self-etching type primer. All screws used to mount any appliance cut into the body of the vehicle must be of machine thread and be a minimum of 18-8 stainless steel in material. All screw holes must contain an approved Rivnut or Nutsert style device such that a machine screw can be used to mount appliance without the risk of strip out during maintenance or corrosion from removal. In no way shall sheet metal screws or any other self-tapping or self-threading screws be used to mount any lighting or other body cut appliance to the vehicle. The use of sheet metal screws or similar fasteners shall be deemed unacceptable and rejected by requester.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.2.2 MOUNTING OF ROOF ITEMS:

All roof mounted items shall be mounted such that not to cause damage to roof structure or weaken the roof in any way. Structure supports shall be added, where needed for heavy items such as tower lights and roof-top A/C units. All interior headliners and trim shall be removed in order to run cables and mounting fasteners properly. Rooftop items shall be through bolted to the roof using 18-8 Stainless Steel machine bolts and lock nuts. The use of self drilling or sheet metal type fasteners shall be unacceptable and result in rejection by requester. Any penetration through roof skin shall be back sealed (from inside vehicle) using approved silicone adhesive sealant. All cables shall be run tight to roof skin and taped to roof and side structure posts so as not to vibrate behind trim or headliner. All trim and headliners shall be replaced to OEM standards so that no evidence of equipment or wires have been added.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.2.3 ROUTING HARNESS AND WIRES:

All converted added wiring harnesses and cables shall be run (when inside vehicle) behind structural supports and cross members. Cable runs from engine to console, console to rear electrical compartment and rear electrical to vehicle body shall be achieved by running protected, loomed harnesses down frame rails, outside vehicle body. All harnesses shall be run along side OEM harnesses and fastened a minimum of every 16" using appropriately rated cable ties. Under no circumstances shall any cables be run under carpet, upholstery or step trim due to likelihood of future damage. Nor shall any cable or harness be run through vehicle's firewall.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

### 4.3 **EMERGENCY LIGHTING AND SIGNAL**

#### 4.3.1 ROOF MOUNT LIGHTING:

As it is necessary to make an opening in the vehicle roof for lightbar cable(s) to be routed, proper and effective sealing of these hole(s) is of paramount importance. All wire holes through the vehicle roof will be protected with self-sealing, waterproof, hole-grommets when clearance is available (otherwise bidder shall seal the hole using standard pliable "duct" seal agent).

The bidder shall provide and install the following roof mounting lighting:

**(1) GB8LLLL WHELEN**

Legacy GB WeCan Duo+, 48-Inch, R/G Corner LEDs (4)  
mount at Roof - Front (Over Driver's Door) with color of  
control device using Front Switch Panel, Overhead

---

**Legacy GB WeCan Duo+, 48-Inch, R/G Corner LEDs (4)**

Special Note: Flash RED corner in emergency mode, flash GREEN corners in COMMAND mode.

---

**(1) GBA WHELEN**

Legacy TIR Short Alley Lights, Pair  
mount at Lightbar Option (In Lightbar) with color of  
control device using Front Switch Panel, Overhead  
Legacy TIR Short Alley Lights, Pair

Special Note:

---

**(4) GBDLD WHELEN**

Legacy Series Dual Color DUO+, Red/White LED Module  
mount at Lightbar Option (In Lightbar) with color of  
control device using Front Switch Panel, Overhead  
Legacy Series Dual Color DUO+, Red/White LED Module

Special Note: Mount in front of lightbar.

---

**(2) GBDLK WHELEN**

Legacy Series Dual Color DUO+, Red/Amber LED Module, Long  
mount at Lightbar Option (In Lightbar) with color of  
control device using Front Switch Panel, Overhead  
Legacy Series Dual Color DUO+, Red/Amber LED Module, Long

Special Note: Mount in rear inboard of lightbar.

---

**(1) GBDSW WHELEN**

Legacy Series Dual Color DUO+, Red/White LED Module, Short  
mount at Lightbar Option (In Lightbar) with color of  
control device using Front Switch Panel, Overhead  
Legacy Series Dual Color DUO+, Red/White LED Module, Short

Special Note: Mount in front inboard of lightbar.

---

**(2) GBDSK WHELEN**

Legacy Series Dual Color DUO+, Red/Amber LED Module, Short  
mount at Lightbar Option (In Lightbar) with color of  
control device using Front Switch Panel, Overhead  
Legacy Series Dual Color DUO+, Red/Amber LED Module, Short

Special Note: Mount in rear inboard of lightbar.

---

**(1) GBTL WHELEN**

Legacy TIR Takedown Long  
mount at Lightbar Option (In Lightbar) with color of  
control device using Front Switch Panel, Overhead  
Whelen Legacy TIR Takedown Long

Special Note:

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.3.2 EMERGENCY SIGNALING AND LIGHTING

The bidder shall provide and install the following additional lighting and signaling devices:

---

##### (1) ALPHASL WHELEN

Remote, 4 Tone Hands-Free Siren, 200W Output (15 SL Tones)  
 mount at \*STD with lens color \*NA  
 control device using Front Switch Panel, Overhead  
 Remote, 4 Tone Hands-Free Siren, 200W Output (15 SL Tones)

Special Note: Integrated siren to front touch screen controller.

---

##### (2) IONC WHELEN

ION™ Series Super-LED® Universal Light, WHITE  
 mount at Grill - Behind with lens color \*NA  
 control device using Front Switch Panel, Overhead  
 ION™ Series Super-LED® Universal Light, WHITE

Special Note:

---

##### (2) IONK WHELEN

ION™ Series Super-LED® Universal Light, Split, RED/AMBER  
 mount at Liftgate, Rear - Interior Surface with lens color \*NA  
 control device using Door (Rear Open)  
 ION™ Series Super-LED® Universal Light, Split, RED/AMBER

Special Note: Mount on inner surface of rear liftgate to face outward when liftgate is open.

---

##### (2) IONR WHELEN

Series Super-LED Universal Light, Red  
 mount at Grill - Behind with lens color \*NA  
 control device using Front Switch Panel, Overhead  
 Series Super-LED Universal Light, Red

Special Note:

---

##### (2) IONSMK WHELEN

ION™ Surface Mount Series Super-LED, RED w/ Black Housing  
 mount at Fenders (Both) - Rear Center Over Wheel with lens color \*NA  
 control device using Front Switch Panel, Overhead  
 ION™ Surface Mount Series Super-LED, RED w/ Black Housing. Includes Scan-Lock™  
 Flash Patterns and a 4-Wire Pigtail.

Special Note:

---

##### (2) IONSMR WHELEN

ION Surface Mounted Super LED Red w/ Black Housing  
 mount at Fenders (Both) - Front with lens color \*NA  
 control device using Front Switch Panel, Overhead  
 Whelen ION Surface Mounted Super LED Red w/ Black Housing

Special Note:

---

**(2) IONSMR WHELEN**

ION Surface Mounted Super LED Red w/ Black Housing  
 mount at Fog/Driving Lights (Both) - Within with lens color \*NA  
 control device using Front Switch Panel, Overhead  
 Whelen ION Surface Mounted Super LED Red w/ Black Housing

Special Note: In space where OEM fog light would be.

---

**(2) MCRNSC WHELEN**

Micron Series Super-LED Surface Mount Lighthouse White w/ Black Housing  
 mount at Running Boards (Both) - Under with lens color \*NA  
 control device using Front Switch Panel, Overhead  
 Micron Series Super-LED Surface Mount Lighthouse White w/ Black Housing

Special Note: Mount one down each side, centered on running board toe step area.

---

**(2) MCRNSR WHELEN**

Micron Series Super-LED Surface Mount Lighthouse, Red w/ Black Housing  
 mount at \*SEE NOTES BELOW with lens color \*NA  
 control device using Front Switch Panel, Overhead  
 Micron Series Super-LED Surface Mount Lighthouse, Red w/ Black Housing

Special Note: Mount on rear liftgate upper brow cowling, outer corners.

---

**(2) MCRNSR WHELEN**

Micron Series Super-LED Surface Mount Lighthouse, Red w/ Black Housing  
 mount at Mirrors Side (Both) - Back with lens color \*NA  
 control device using Front Switch Panel, Overhead  
 Micron Series Super-LED Surface Mount Lighthouse, Red w/ Black Housing

Special Note:

---

**(4) MCRNSR WHELEN**

Micron Series Super-LED Surface Mount Lighthouse, Red w/ Black Housing  
 mount at Running Boards, Kick Space Area with lens color \*NA  
 control device using Front Switch Panel, Overhead  
 Micron Series Super-LED Surface Mount Lighthouse, Red w/ Black Housing

Special Note: Mount two down each side, forward/rear on running board toe step area.

---

**(2) RSR02ZCR WHELEN**

LIN3 Super LED, Red  
 mount at Liftgate, Rear - Exterior with lens color \*NA  
 control device using Front Switch Panel, Overhead  
 LIN3 Super LED Lighthouse, Red

Special Note: Mount on license plate backer plate, vertical on either side of rear license plate.

**(1) SA315P Kit WHELEN**

100W Poly Siren Speaker Kit  
 mount at Grill - Behind with lens color \*NA  
 control device using to Console  
 100W Poly Siren Speaker Kit. Includes Speaker and Universal Mounting Bracket.

---

Special Note:

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### **4.4 INTERIOR EQUIPMENT AND WORK LIGHTING**

All interior items are to be mounted in approved brackets or straps and are to be secure in mounting method. Any items mounted in the cab of the vehicle are to be mounted such that they do not interfere with the normal function of the driver or driver's airbag and SRS system. Any swing arm devices mounted in the passenger area shall be delivered in the position that will not interfere with the passenger airbag system (if so equipped). It is the responsibility of the user to ensure that these devices are not adjusted, stored or moved into the path of said SRS systems.

The bidder shall provide and install the following additional interior devices and work lights:

---

**(4) OZLEDFCW -**

LED Flood Light - Cool White  
 mount at Liftgate, Rear - Interior Surface with lens color \*NA  
 control device using Door (Rear Open)  
 LED Flood Light, Cool White

Special Note:

---

**(2) Micro-Eyeball 1W - Cool White Pilot Lights**

Micro EyeBall LED Light - Cool White  
 mount at Liftgate, Rear - Interior Surface with lens color \*NA  
 control device using Door (Rear Open)  
 Micro EyeBall LED Light (12 to 24 VDC) - Cool White

Special Note:

---

**(2) IONGROM\* WHELEN**

Grommet Mount Kit for ION Series LED  
 mount at \*SEE NOTES BELOW with lens color \*NA  
 control device using \*STD  
 Grommet Mount Kit for ION Series LED

Special Note: Mounting option for WIONC bumper floods.

---

**(2) WIONC WHELEN**

ION™ Wide Angle Series Super-LED, White  
 mount at Bumper, Rear - Built-In with lens color \*NA  
 control device using Reverse & Door w/ Cancel  
 ION™ Wide Angle Series Super-LED, White. Includes Universal Mount, Scan-Lock  
 Flash Patterns and a 4-Wire Pig Tail.

Special Note:

**(1) KD-UN-X-SF-PHS ZICO**

SCBA Cylinder Bracket w/ pos hold strap (X=Size)  
 mount at Cabinet, Passenger Side with lens color \*NA  
 control device using \*STD

---

SCBA Cylinder Bracket w/ pos hold strap (X=Size). Need make and model of desired cylinder for bracket size (X).

Special Note: For SCBA roll-out tray.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

## 4.5 **COMMUNICATIONS**

### 4.5.1 INSTALLATION STANDARDS:

All communications equipment, whether requester for bidder supplied, shall be installed per any and all manufacturer's recommendation. Power (12V+) supplied to this equipment shall run straight to the battery of the vehicle on a minimum of #6 gauge cable to minimize noise. All grounds shall be common and run to chassis frame using a minimum of #6 gauge cable to minimize noise. All weather-exposed connections must be coated to prevent corrosion. Any external speakers specified by requester must be installed and have power and resistance ratings matching those of the speaker outputs on the equipment. Any cable runs to these speakers longer than 24" must utilize a minimum of 18 Ga., shielded, approved speaker cable.

All listed radio equipment must be tested and operate within manufacturer's specifications prior to delivery of the vehicle described herein. The radios must be noise free (less than 10dB of spurious noise per unit) and be fully functional upon delivery.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

### 4.5.2 RADIO AND COMMUNICATIONS DEVICES:

Bidder shall furnish and/or install the following devices/services.

---

#### **(2) ANT/COAXRUN -**

Coax Pre-Wire with MOT Mount  
mount at Roof - Centered with frequency range of \*NA  
control device using to Console

Special Note:

---

#### **(2) ANT/COAXRUN -**

Coax Pre-Wire with MOT Mount  
mount at Roof - Centered with frequency range of \*NA  
control device using to Rear RCC

Special Note:

---

#### **(1) N2620G ACER**

Veriton Computer Celeron 1.60GHz 2GB DDR3 500GB HDD  
mount at Electrical Access Compt. with frequency range of \*NA  
control device using Ignition

Special Note: Connect to 3239L Touchscreen in rear cabinet for Rhodium Incident Command software.



---

**(1) 3239L ELO**

32-Inch LCD Open Frame Full LED Touchmonitor  
 mount at Console, Driver Side with frequency range of \*NA  
 control device using Door (Rear Open)  
 32-Inch LCD Open Frame Full LED Touchmonitor

Special Note: Mount in dedicated pull-out drawer. Connect to N2620G Mobile PC in rear for use with Rhodium Incident Command software.

---

**(1) PCTMDL PCTEL**

GSM/Wifi/WiMAX/GPS Antenna, Stud Mount, SMA  
 mount at Roof - Centered with frequency range of \*NA  
 control device using to Console  
 GSM/Wifi/WiMAX/GPS Antenna, Stud Mount, SMA

Special Note: Tri-Band. Broadband/WiFi & GPS in one unit.

---

**(1) PEPWAVE-VERIZON PEPWAVE**

Verizon 4G LTE WiFi Hotspot Mobile Router System (service extra)  
 mount at \*STD with frequency range of \*NA  
 control device using Ignition  
 Verizon 4G LTE WiFi Hotspot Mobile Router System (service extra)

Special Note: Service ready. Requires activation, by customer.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

**4.6 FRONT CONSOLE****4.6.1 CAD (COMPUTER AIDING DRAFTING) DRAWINGS:**

The bidder shall supply, upon submission of his/her proposal, a preliminary CAD drawing detailing the overall design, dimension and materials/finishes that will be supplied on the finished product. These prints must be to scale and must be the drawings used for preliminary, design, final approval and finally fabrication. This type of "consistency of design" is an absolute must as it pertains to any designs that must be approved by this requester prior to fabrication. Any bids submitted without CAD drawings shall not be considered.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

**4.6.2 GENERAL CONSOLE CONSTRUCTION METHODS:**

The bidder will provide and install a custom front console to house all necessary switching, signaling and communications controls, as well as any added cup holders, map books and 12-volt power-points, as desired. The primary console construction (sides, front, and rear) shall be of cabinet grade ¾" lumber core or veneer core ply material, covered in coordinating, stain-resistant automotive carpeting. Where map book or other slots are provided, these spaces shall also feature automotive carpeting. Whenever functions of the OEM installation are interrupted by the console (rear radio or HVAC controls, ducting, etc) these features shall be reintegrated into the new console. Due to the continual and strenuous use these vehicles endure, materials that chip (such as Formica) or stain (such as unprotected carpeting) will be considered unacceptable.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.6.3 SCULPTED CONSOLES:

The provided custom console shall be scribed to mate tightly to the OEM vehicle dash, thus enabling the most effective use of all possible storage space. This installation typically necessitates the loss of certain OEM functions (power points, cup holders) therefore these functions must be reintegrated into the new console. The obstruction of vital OEM features (front HVAC controls, audio system) is not acceptable. Interference with OEM airbags or any other supplemental safety systems will be deemed unacceptable.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.6.4 ALUMINUM CONSOLE FEATURES:

The face surface (top) of all front consoles shall be constructed of .090 aluminum sheet(s). These faceplates will be cut to size using CNC or sheering operations, other cutting methods are unacceptable as they lead to sharp edges and distortion. Under no circumstances shall these cutouts be performed by hand. Bidder must have the ability to duplicate these items without the original unit in shop. All holes necessary in the faceplate (radios, switching, etc) will be die-cut to a maximum allowable tolerance of +/- 0.003" through the aluminum. Gaps around mounted appliances will not be tolerated and shall be deemed unacceptable. The finished product will feature rounded edges and corners to prevent injury to people or equipment. Aluminum provides excellent durability and a common ground reference for all electronics in the console. The use of wood or laminate covered wood on the faceplates is unacceptable.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.6.5 FACEPLATE COATING:

Fabricated .090 aluminum faceplates will receive a protective black textured powder coating. This material shall have a textured finish, minimizing potential glare while providing for easy maintenance and cleaning. This coating will be highly resistant to scratching, scuffing, chipping or staining, and will be able to stand-up to most any typical chemical exposures. The use of laminate such as Formica or PVC coating shall be deemed unacceptable.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.6.6 ATTACHMENT OF CONSOLE:

The above console shall be attached using structural angle brackets rated for a minimum of 100 pounds of force. A minimum of three attachment points are required and the console is to be fastened to the OEM floor using ¼" self-tapping lag screws.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.6.7 CONSOLE FEATURES:

In addition to the above listed console specifications, the front console shall include the following features:

There shall be 1

- MAPSLOT - Open Map Storage (one per divider) included as part of the console.

This mapslot to be fabricated from similar material as main body of console and coated in matching finish (see finish section).

---

**Special Note:**

---

There shall be 1

- OHCCSUV07 - Overhead Control Console, SUV included as part of the console.

Overhead control console to house front switch panel, front driver's message center, (2) LED dome lights, (3) 5-Watt Radio Speaker and any vital OEM functions.

**Special Note:**

---

There shall be 1

- USBPP - DUAL USB POWER POINT 12V DC OUTPUT 5V 2.5A MAX included as part of the console.

DUAL USB POWER POINT 12V DC OUTPUT 5V 2.5A MAX

**Special Note:**

---

There shall be 2

BECKSON CUPHOLDER - Cup Holder Oversized Marine Style included as part of the console.

Oversized marine style cup holder, features dual size holder for oversized cups, drain holes and durable ABS construction.

**Special Note:**

---

There shall be 1

MARINCO 12VPP00 - 12V Power Point Receptacle Cigarette Lighter Style included as part of the console.

12V Marine Grade, power point receptacle. This power point shall be in the style of cigarette lighter (standard style) and include a rubber dust cover to prevent damage when not in use.

**Special Note:**

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

**4.6.8 CONSOLE FINISH**

The exterior sides of the console shall be coated in POLYBUILD COATING on all exposed surfaces. Under no circumstances shall high pressure laminates, Formica or upholstery vinyl be used since these materials are prone to chipping or cracking.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

**4.7 REAR CABINETY**

This section shall describe the basic design and construction requirements of the rear command/storage cabinet(s). As each requester shall have specific needs, it is imperative that this cabinetry be custom built to the requester's satisfaction. The use of modular or pre-constructed cabinetry shall be unacceptable and shall serve to disqualify any potential bidder. With the crucial nature in which this vehicle will serve, anything less than custom is considered substandard.

**4.7.1 CAD (COMPUTER AIDING DRAFTING) DRAWINGS:**

The bidder shall supply, upon submission of his/her proposal, a preliminary CAD drawing detailing the overall design, dimension and materials/finishes that will be supplied on the finished product. These prints must be to scale and must be the drawings used for preliminary, design, final approval and finally fabrication. This type of "consistency of design" is an absolute must as it pertains to any designs that must be approved by this requester prior to fabrication. Any bids submitted without CAD drawings shall not be considered.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

**4.7.2 CONSTRUCTION:**

This requester has specified a wooden cabinet for the rear of the vehicle listed. All wood shall be lumber or veneer core ply. The structural use of any particulate or engineered wood products is prohibited and shall disqualify any bidder if used. The cabinet shall be constructed using ¾" LC/VC ply and be nailed, glued and screwed together at all fixed joints.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

**4.7.3 REAR CABINET FEATURES:**

---

**110V GFI 20A Receptacle (110VGFI)**

This section shall include 2....

There shall be one (1) 110V, 20A Receptacle, powered by included shoreline inlet (see Electrical Section) mounted in the cabinet communications panel. This outlet shall be duplex in nature to include two stacked standard receptacles, and shall be overload protected.

Special Note: Powered off inverter (transfer switch to shoreline when connected). One at RCC panel and one in midrow storage cabinet at adjustable shelf.

---

**Adjustable Shelf (each) (ASHELF)**

This section shall include 1....

Adjustable shelf coated in same finish as interior of cabinet (see Finish Specs, in Cabinet Section). This shelf shall be attached using a minimum of four (4) aluminum strut channels (Unistrut Model P7000, or equivalent) recessed into cabinet wall so as to not use up any storage potential of the compartment. The shelf shall be connected to this channel using approved spring nuts (Unistrut Model P7006, or equivalent) and ¼-20 bolts to which a heavy-duty angle brackets (Unistrut Model P6026, or equivalent). The use of perforated track standards have proven to be lightweight and unreliable and should not be considered acceptable. The use of "non-commercial" or lightweight adjustable shelf hardware, such as perforated track standards, shall be deemed unacceptable and rejected by requester.

Special Note: In midrow cabinet.

**A-Frame Style Command Flip-up Surface (Dual Sides) (CBAFRAME)**

This section shall include 1....

A-Frame Style Command Flip-up Surface (Dual Sides). Integrated into the rear command drawer shall be a lift-up, deployable A-Frame style propped command work surface. Surface shall be unfolded such that when deployed, the unit shall have two work surfaces opposite one another and hinged at the top. In the deployed mode, the vertical surfaces shall maintain themselves under weight at approximately 45-60 degrees of angle. When not in use, this a-frame shall fold down into the top surface of the command

---

drawer and close for storage. Surfaces shall be constructed from 0.090" aluminum and covered with coordinating high pressure laminate.

Special Note: Mount in top surface of command drawer.

---

#### Command Drawer, 36" Deep (CDBLS36)

This section shall include 1....

Command drawer and board system with minimum internal dimensions shall be no less than 34" deep, 20" wide and 2" high. This command drawer shall be used in accordance with the NFPA accountability recommendations and must be functional in nature. The drawer shall have a nested, lift-up surface, hinged from the back inside edge of the drawer box. This drawer shall be mounted with heavy duty, lock open slides, rated for at least 200# of weight (with easy release) that will hold the drawer open during use. The drawer box is to be constructed using standard 5-piece construction methods and coated in Polybuild (pure Polyurea), waterproof coating for easy cleaning. The drawer face shall milled from 1/8" solid aluminum and powder coated using black texture powder coat for a durable, scratch resistant coating. Further this drawer must utilize a Southco (or similar) metallic latch rated for not less than 200# of pressure when closed.

Special Note: Command Drawer (traditional)

---

#### Door, High Density Poly 1/2Inch (Starboard) Black (DOORHDP)

This section shall include 1....

High density polyethylene (HDPE) door(s) covering specified open storage area(s). This door shall be constructed from 1/2" black textured HPDE and be attached along one side using a continuous hinge. Further this door must utilize a Southco (or similar) slam style latch with the ability to hold closed against a minimum of 50 pounds of force.

Special Note:

---

#### Heavy Duty Pull-Out Tool/SCBA Board (Vertical) (HDTOOLB)

This section shall include 1....

Heavy Duty Pull-Out Tool/SCBA Board (Vertical) to include lock open, lock closed slide with quick release.

Special Note: Flip up (vertical) SCBA board mount in SCBA HD Tray. Surface will flip up when tray is open to 90 degrees to don SCBA.

---

#### Heavy Duty Tray, 36" Deep (HDTRAY36)

This section shall include 1....

Heavy-duty roll-out tray(s) with minimum dimensions of 3"H x 36"D. The tray box is to be constructed using standard 5-piece construction methods and coated in Polybuild (pure Polyurea), waterproof coating for easy cleaning. This tray shall use heavy-duty, full extension slides with a minimum functional rating of 300 pounds. Further this drawer must be held in the closed position using a metallic spring latch mechanism. This spring latch must be rated to hold drawer closed during rapid deceleration of the vehicle with a minimum loaded weight of 100 pounds. This latch must be easily operated by a user wearing bulk work style gloves.

Special Note: SCBA Storage

#### Midrow Cabinet, Remove 60% Seat (MIDROW60)

This section shall include 1....

Midrow cabinet extension to occupy the 60% midrow seating area. The 60% portion of the midrow (2nd Row Seating) shall be removed and the rear cabinet shall extend into this section. This midrow extension shall be constructed such that an operator may

utilize the functionality of this cabinet while sitting in the remaining 40% seat. This midrow extension shall features many other options as listed herein. Further, this extension shall be built to not interfere with any of the front seat functions. The driver's seat must be able to be adjusted fully toward the rear of its track travel and must be able to be reclined up to 5 degrees from the seat back up, locked position. This midrow extension shall be built as part of the main cabinet and shall include the same finish and construction features of the same.

Special Note: Removable, midrow cabinet behind driver's seat.

---

#### Rear Cabinet Control Center (RCC)

This section shall include 1....

Rear cabinet communications/electrical panel milled from 0.090" aluminum and have all requester-supplied radios (as listed in the COMMUNICATIONS section) die cut through the face. The use of aluminum is imperative to provide durability but more importantly a good ground reference for the electronic equipment. This panel shall be powder coated using black texture powder coat for a durable, scratch resistant coating. Other items such as 12V power points, rear switch control panels, etc shall be mounted here as indicated and called for in this document.

Special Note:

---

#### Vertical Pull-Out Board on Lockout Slide (VERTBOARD)

This section shall include 1....

Vertical pullout surface (minimum of 36" deep) on lock open slide. Surface shall be mounted on a minimum of two 200# HD slides one of which shall lock in the open position. Board shall be held in the closed position by means of a thumb operated spring latch capable of holding closed a minimum of 200# of force. Front surface to be coated in high pressure plastic laminate. The rear of the surface and all edges to be coated in polybuild coating.

Special Note: Mount for roll-out, 32" Touchscreen monitor.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4.7.4 FINISH:

##### 4.7.4.1 Interior Cabinet Finish - Polybuild

The inside of all rear and midrow cabinet surfaces shall be finished using a pure poly-urea (Polybuild) coating that is UV stable, impervious to water, blood and other contaminants. This coating shall be applied as one contiguous layer leaving no seams, cracks or joints. This finish shall be applied with a minimum finished thickness of 100 mills.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

##### 4.7.4.2 Exterior Cabinet Finish - Formica

The outside of this cabinet shall be covered in a coordinating color high-pressure laminate, matte finish. This laminate must be applied per the manufactures recommendations and have the ability to be cleaned with moderate amounts of water from time to time. Exposed corner-to-corner laminate on edges that may have equipment crossing them is unacceptable. All edges of this nature must be protected with a minimum of 0.040" of aluminum or ABS.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### **4.7.4.3 Exposed Edges**

All open and exposed edges of the material which makes up the rear cabinetry, shall be eased over by a minimum of 1/4" radius, smoothed and the interior/exterior finish material (as listed herein) shall be "rolled" around all edges to produce a seamless, contiguous coating. T-Molding and other trim breaks down under use and eventually begins to separate from the cabinet system. UNDER NO CIRCUMSTANCES SHALL AN APPLIED MOLDING, RUBBER TEE MOLDING OR OTHER TRIM BE APPLIED TO ANY EDGES.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### **4.7.5 INSTALLATION / ATTACHMENT:**

The rear cabinet system must be structurally mounted in the vehicle. The use of self-tapping or lag type screws for primary attachment is unacceptable. The cabinet must be bolted into the vehicle through a structural plate or frame rail within the vehicle. Bolting through the sheet metal floor is unacceptable. The use of existing seat mounts or other structural OEM mounting devices is ideal, since these devices typically are testing for strength. Bolts must be a minimum of 3/8" in diameter; grade 5 and the nut on each bolt must be fully threaded onto the shank with 1-2% of the threads exposed above the nut. The use of washers is imperative where the nut meets the undercarriage of the vehicle; the minimum standard is one flat washer against the chassis and one lock washer between the flat washer and nut. There shall be a minimum of two (2) bolts used and/or a maximum spacing of 360 square inches between bolts. The bolts shall be torqued to 100 ft/lbs. each.

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

### **4.8 VEHICLE LETTERING**

Vinyl graphics shall be supplied from bidder to conform to any transportation safety or regulatory compliance issues. If indicated all reflective material is 3M Scotchlite 680 Series Premium Reflective vinyl (or higher quality) with a minimum outdoor guarantee of three (3) years. All graphics to be hand applied using techniques outlined by the manufacturer. Overlaying dissimilar types of vinyl has shown to lead to lifting or cracking, therefore this practice shall not be allowed. Fonts and design details to be finalized at time of contract award. Bidder to supply and install the following lettering on exterior surfaces of vehicle:

---

Letters to read: Allowance for 60 Letters

To show 3 time(s) on vehicle, cut from 3M Scotchlite 680 in the size of 4 inches, located on TBD using the font Match Existing and color of TBD with TBD outline and TBD shadow.

Special Note:

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

### **4.9 VEHICLE STRIPING**

Vinyl graphics shall be supplied from bidder to conform to any transportation safety or regulatory compliance issues. If indicated all reflective material is 3M Scotchlite 680

Series Premium Reflective vinyl (or higher quality) with a minimum outdoor guarantee of three (3) years. All graphics to be hand applied using techniques outlined by the manufacturer. Cutting of curves and intricate contours while vinyl is in contact with the vehicle is unacceptable. Overlaying dissimilar types of vinyl has shown to lead to lifting or cracking, therefore this practice shall not be allowed. Continuous runs of striping that require splicing together of striping material shall use overlapping splices. Butt joint splices shall not be permitted. The striping shall be supplied by bidder as described below:

---

Add the Strip Style: One Piece Swoop Transition

To appear 1 time(s) on vehicle, cut from 3M Scotchlite 680 in the size of 4 inches, located on TBD in the color of TBD.

Add to this stripe a pinstripe of Double in the color of TBD in the size of 1 cut from 3M Scotchlite 680 on Both edge(s) of main stripe with 1 inches separating this pinstripe from main stripe above.

Special Note:

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### **4.10 EXTERIOR EQUIPMENT**

All exterior accessories shall be matched to vehicle make and model and installed following manufacturer recommendations and instructions. By no means shall the original vehicle be modified (structurally) in order to install the equipment listed herein.

Bidder shall supply and install the following exterior equipment:

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

#### **4.11 ELECTRICAL UPGRADES**

The bidder shall supply and install the following electrical upgrade items:

---

**(1) FP3820 FASTLANE**

FastPlex 4.3" CAN BUS Touchscreen Display & Control  
 mounted at Cabinet, Rear RCC Area  
 control device using Door Open  
 FastPlex 4.3" CAN BUS Touchscreen Display & Control

Special Note: Add 2nd Touchscreen display for FastPlex in rear at cabinet RCC.

---

**(1) FPK2600 FASTLANE**

FastPlex 12 Button Tradition Switch Panel, CAN BUS Control  
 mounted at Console, Faceplate  
 control device using Ignition

Special Note: Optional 12-Button switch panel in addition to OH touchscreen display.



---

**(1) 091-18WP-120 KUSSMAUL**  
 Auto Eject 15-Amp 120V  
 mounted at Fender Driver's - Behind Door  
 control device using Start

Special Note:

---

**(1) PD9245C PROGRESSIVE DYNAMICS**  
 45-AMP CHARGER, WITH BUILT-IN CHARGE WIZARD  
 mounted at Electrical Access Compt.  
 control device using 110V Shoreline

Special Note:

---

**(1) ETISS0-07 SOUNDOFF**  
 Ignition Security System, Standard Model  
 mounted at \*SEE NOTES BELOW  
 control device using \*STD  
 SoundOFF Signal Ignition Security System, Standard Model

Special Note: Mount ignition override switch on front console near driver.

---

**(1) XM1800 XANTREX**  
 Pro Series 1800W Inverter with TS  
 mounted at Electrical Access Compt.  
 control device using Rear Switch (Single)  
 Pro Series 1800W Inverter with built-in transfer switch and remote mountable control panel.

Special Note:

Will furnish section as written: Yes \_\_\_\_\_ No \_\_\_\_\_

\*\*\*\*\*END OF SPECIFICATIONS\*\*\*\*\*