GREAT LAKES WFM SUPPORT VEHICLE SPECIFICATIONS

Center Console

The cab shall be equipped with an angled front, form-fitted control console located between the front driver's and officer's seats. This console shall be sized to accommodate the installation of a switch panel for the control of the emergency and general illumination lighting, siren controller, and customer-mounted radios. The switch panel shall consist of an sixteen (16) switch multiplex module with lighted switches. The switch module shall have back lighted identification plates on a non-glare panel surface. The switch panel shall be illuminated whenever the master switch is in the “ON” position. Panel light brightness shall dim automatically via the multiplexing system when the chassis headlights are turned "ON". The cab console shall be fabricated from steel, and powder coated with a black finish.

The following controls and switches shall be positioned from forward to aft on the center console as follows:

- Two (2) faceplate for customer specified radios
- An Innovative Products, Inc. Magnetic Mic base for each of the agency's radios
- One (1) microphone hanger for the electronic siren microphone
- One (1) switch panel with sixteen (16) switches

- Two (2) cup holders
- Two (2) 12 volt plunger style outlets
- Four (4) 12-volt outlets (2) Standard USB & (2) USB-C)
- One (1) 6.00-inch storage compartment
- Two (2) adjustable arm rest

The specific console layout shall be discussed/determined during the pre-work conference and a drawing of the layout shall be provided to the end user for approval.

12-Volt Power Sources

The cab shall have four (4) additional 12-volt power sources provide on the center console for recharging cell phones, or other similar battery operated devices. Two (2) of the power sources shall be **dual 2.1A USB style ports** and **two (2) shall be USB-C style ports**, flush mounted in the center console and shall have rubber cabs. In addition there shall be two (**2) plunger style 12 volt outlets**
The power sources shall be wired so they will be "active" when the BODY MASTER switch is in the ON position.

Map Light

A LED overhead domestyle map light with switch shall be installed in the cab. The map light shall be selectable between blue and white light.

Wiring for Radio(s) Installation

The chassis cab interior shall be wired with two (2) wiring bundles for connecting agency mobile radios.

The bundles shall be separate from each other and terminate in a Deutsch brand connectors. The antenna wires shall remain separate from the connector. A pigtail shall be included for each bundle for connecting the agency radio into the wiring harness. Each bundle including antenna wires shall be labeled RADIO 1 or RADIO 2. In addition the individual wires in each pigtail shall be labeled (Battery Power, Ground, PA Input, etc.). The pig tails and antenna wires shall be a minimum of 3-feet or as long as required for installation of the radios. Includes **(1) one BK M150 VHF & (1) one M800 Mobile with antenna to be GPS enabled PN KAA0835 antenna**

All connections shall be made to the battery. Blade style fuse holders, using the same size fuses as the chassis, shall be installed in the pigtails for the constant power, but no fuses shall be installed.

The location for the radio installation and radio wiring bundles shall be determined in conjunction with the NFEP, overhead shall not be acceptable.

Wiring bundle for RADIO 1 shall consist of:

Harness side connector: DT06-08SA
Pigtail side connector: DT04-08PA

- One (1) Red 10-gauge constant power to the battery. This shall split into two (2) 14-gauge wires going into the cavities 1 and 2 on the connector.
- One (1) Red with Black Stripe 12-gauge connected to the chassis ignition, supplying power when either the vehicle ignition is in the "Auxiliary" or "Run" position. This shall split into two (2) 14-gauge wires going into the cavities 3 and 4 on the connector.
- One (1) Black 10-gauge ground wired direct to the battery. This shall split into two (2) 14-gauge wires going into the cavities 7 and 8 on the connector.
- One (1) set of 18-gauge wires connected to the radio audio input for the PA system consisting of two (2) Light Blue wires going into the cavities 5 and 6 on the connector. If polarity is needed with the audio input for PA System the positive shall be solid (cavity 5) and the negative shall have a White Stripe (cavity 6)
- One (1) antenna lead which shall be labeled coiled and secured near the RADIO 1 connector

Wiring bundle for RADIO 2 shall consist of:

Harness side connector: DTHD Series
Pigtail side connector: DTHD Series

- One (1) Red 8-gauge constant power to the battery. This shall terminate into a DTHD06-1-85 connector
- One (1) Red with White Stripe 12-gauge connected to the chassis ignition, supplying power when either the vehicle ignition is in the "Auxiliary" or "Run" position. This shall terminate into a DTHD06-1-125 connector
- One (1) Black 8-gauge ground wired direct to the battery. This shall terminate into a DTHD04-1-8P connector
- One (1) antenna lead which shall be labeled coiled and secured near the RADIO 2 connector

Radio Model(s): See Above

Added information provided at pre-con as may be required.

Antenna Leads and Bases

Two (2) antenna mounts with coaxial cable shall be supplied and installed a minimum of 18.00-inches apart and centered on the chassis cab roof. The components shall consist of a brass ¾-inch New Motorola (NMO) style Antenna Mount and Double Shielded Coaxial Cable soldiered to the base. The coaxial cable shall terminate in the cab console and have a minimum of four (4) feet of additional cable. The cable shall be routed from the chassis/cab headliner to the console in a concealed manner. All cables shall be labeled as to where they are installed on the roof. A protective rain cap shall be installed on each NMO antenna mount. Each cap shall be labeled as to the respective pre-wired set by placing a "RADIO 1" or "RADIO 2" on the rain cap itself.

See Radio Section Above
Antenna PN. - KAA0835

Back Up Alarm

One (1) Federal Signal Evacuator series solid state back up alarm shall be provided at the rear of the apparatus, protected from impact and debris. The back-up alarm shall be wired to the reverse circuit of the transmission and shall provide an audible alarm to the rear of the apparatus when reverse gear is selected. The alarm shall have a minimum volume of 87-decibels while in operation.

Back Up Camera

One (1) Alliance Wireless Technologies, Inc. (AWTI) heavy duty slim line back up camera shall be installed on the finished apparatus. The installation of the camera shall follow the manufactures recommendations and comply with federal and state laws.

The Camera Control / Screen shall be mounted in place of the review mirror.

- HD Slim Line 3 Port Monitor, part number **AWTSL503M 3rd Eye**
- 10G shock and vibration rating
- 5.00-inch diagonal screen size
- Supports up to three (3) cameras
- LED panel technology
- Auto / Manual dimmer function

Heavy Duty Camera, part number AWT1020T

- 150-degree lens angle
- Microphone
- IR for optimal view in total darkness
- 510 x 492 effective pixels

The camera shall have the ability to see the rear of the apparatus without the chassis being placed in the "REVERSE".

The mounting location shall be centered in the rear tail skirt. The hole for the camera lens shall be size appropriately and the camera shall be mounted in a fashion that does not decrease the functionality of the camera lens. The camera shall be protected and easily accessible in the need of repair(s).

Black Nerf Style Bars

Black nerf style tubular running boards shall be provided on each side of the chassis cab below the doors.

Cell Phone Signal Booster Kit

One (1) weBoost **Drive Reach OTR Fleet PN 477154. with OTR 50db gain or more Antenna,** The cell phone signal booster shall be installed within the interior of the chassis cab. The external antenna shall be centered on the chassis cab roof and the internal antenna shall be mounted within the driver's side front seat. The booster shall be installed within the floor mounted center console. The booster shall be installed in the chassis cab per the manufacturer's recommendation.

Front Bumper and Brush Guard

The chassis shall be equipped with a custom heavy-duty plate style front bumper/grill guard. The front bumper/grill guard shall meet the requirements of NFPA 1900 current edition. The front bumper/grill guard shall be designed so that it does not affect the chassis manufactures warranty. The front bumper/grill guard shall be designed so that it does not negatively affect the chassis approach angle. The front bumper/grill guard shall be equipped with provisions for winch mounting. The front bumper/grill guard shall be equipped with two (2) integrated external tow eyes. The weight of the front bumper/grill guard shall not exceed 175 pounds. All exterior surfaces of the entire grill guard assembly shall be coated with a minimum 1-2 mm flat black powder coated finish. The front bumper shall contain a license plate mounting position with holes or a bracket for mounting.

Rear Bumper Construction

The rear bumper shall be a minimum of 3.00-inches tall by 8.00-inches deep and extend across the entire width of the apparatus body. The bumper shall be fabricated from heavy-duty steel tubing and shall be powder coated black. The top of the bumper shall be a 4F stainless-steel CNC punched and perforated non-skid resistant surface. The bumper shall be designed to protect the apparatus body.

Fold Down Rear Step

One (1) fold down rear step shall be provided at the rear of the apparatus body. The step shall pivot underneath the rear bumper and shall fold up aft of the rear bumper when not in use. The step shall be constructed from steel with a stainless-steel skid-resistant stepping surface. The step shall be held in the up position by two (2) pins. Installation of red/white reflector DOT stripe shall be provided on the underside of the step.

Note, Discuss latching at pre- con meeting.

Rear Receiver Hitch

The chassis shall be equipped with a Class V rear receiver hitch with a 2.50-inch receiver opening and integrated OEM trailer brake controller. The rear bumper shall be designed so that it does not hinder the use of receiver in any way. A seven (7) pin RV style trailer plug shall be located on the vertical rear surface of the apparatus body adjacent to the rear receiver hitch. A 36.00-inch long seven (7) pin trailer plug extender/pigtail, with both male and female ends, shall be included with the completed apparatus.

Tow Points

Two (2) rear tow eyes shall be attached to the chassis frame to allow towing of the apparatus without damage. The rear tow points shall extend through the rear panel just above the rear bumper and shall not interfere with the bumper during the normal twisting of the apparatus. All tow eye openings shall be large enough to attach up to a 3/4-inch threaded clevis, but shall not be large enough to pass a tow strap through.

Winch

One (1) Warn electrically operated 16,500-pound shall be installed within the heavy duty front bumper described elsewhere in this specification. The winch shall feature 80-feet of 3/8-inch Spydura Pro synthetic rope, an 18,000-pound capacity EPIC hook, and remote control/switch. The ground (-) for the winch is routed and secured to the ground (-) on the chassis' battery. The positive (+)/power for the winch is routed and secured to the positive (+)/power side of one (1) of the 150-amp circuit breakers underneath the chassis' hood. For the winch to "power up" the end user will need to plug the winch remote into the winch otherwise, the winch is not drawing any amperage.

Apparatus Frame Construction

The apparatus body and compartments shall be supported with a frame of channel or tubular aluminum members. The frame shall extend under the wheel well areas at the front and rear and shall be attached to the compartments. The cross-members in the support system shall be spaced so that there is no more than ¼-inch of vertical deflection per 256-square-inches when 250-pounds is evenly distributed over 40-square-inches. All tubular aluminum shall have a minimum wall thickness of 3/16-inch and any channel shall be a minimum of ¼-inch thick. The frame shall be constructed to become an integral portion of the apparatus body.

The channel or tubular aluminum deck and compartment support frames shall be strong enough to support 5000-pounds in the bed area and 1000-pounds of equipment in each side compartment (the actual load capability of the completed apparatus may be limited by the GVWR).

Flexible Mounting

A spring-loaded body mounting system shall be used to mount the body to the chassis. This system shall be designed to allow independent movement between the body frame and the chassis frame protecting the module from the stresses and twisting rendered by the flexing of the chassis frame. As such, the body frame shall not rest on the chassis frame at any point. The mounts shall be pre-engineered for their intended use.

All the mounting hardware (nuts, bolts, washers) required for complete body installation shall be Grade 8 for sizes ½-inch and smaller, and Grade 5 for sizes larger than ½-inch. All nuts shall be self-locking style. All mounting brackets shall be powder coated black.

The body front shall be mounted utilizing fluorescent powder coated pre-engineering springs. The center mount shall consist of an 18.00-inch-long Delrin spacer mounted mid-length allowing the body frame to rest in a neutral position under full load. The rear body mounts shall be affixed via solid mounts to the chassis frame.

Apparatus Body Construction

The installation of hardware parts such as hinges, catches, handles, or knobs shall be accomplished to avoid damaging the hardware or the mounting surface. After fabrication, all parts shall be cleaned of the following: smudges; loose, spattered, or excess welding; metal chips or fillings; or any other foreign material which might detract from the intended operation, function, or appearance of the apparatus or its equipment. This would include any particles which could loosen or become dislodged during the normal expected life of the equipment. Whenever possible, this cleaning shall take place before the parts are assembled.

Threaded parts or devices shall show no evidence of cross-threading, mutilation, or detrimental burrs. All screw type and rivet fasteners shall be tight to allow no relative movement between the attached parts. All bolts and screws shall not be tightened more than the SAE torque standard established for the grade, screw, and thread type.

The entire body shall be removable in its entirety without the disassembly of any compartments, flooring, or other structural components.

The body shall be designed to be approximately as wide as the outside wheel track on the rear axle. This will allow the apparatus to maneuver more easily in off-road environments. The body shall be approximately 98.00-inches-wide form side to side at the rear of the apparatus.

The top of the apparatus body shall support, without distortion, up to 300-pounds.

The entire apparatus body shall be an independent structure fabricated from bonded and molded fiber reinforced composite panels and compartments. The resin shall be thermoset and shall not be subject to distortion or loss of structural integrity at temperatures at minimum of 350 degrees Fahrenheit (176 degrees Celsius). This shall provide a strong, lightweight, corrosion free structure that will withstand extremely high temperatures.

All fiberglass used in the construction of the body shall be grade “E” or “S,” and the resin to glass ratio shall be a 30/70 ratio average or higher. The glass reinforced polyester shall not be less than 3/16-inch thick at any point on the body. Additionally, all coring materials shall have a minimum covering of 1/8-inch thick glass and resin on either side. All coring for bulkheads, partitions, floors, compartments, and doors shall be either PVC-based, rigid, closed cell structural foam, or composite material. Wood is not acceptable.

The fiber composite body shall allow for up to 30-degree flex off-center without causing body fatigue or component failure.

Wheel Well Area

The inside of each wheel well shall be lined with three (3) separate pieces of minimum 18-gauge stainless-steel sheet material to protect the underside of the entire body wheel well area. Each sheet shall be attached with stainless-steel screws or bolted with self-locking nuts. The use of rivets shall not be acceptable.

Compartment Door Construction

All compartment doors shall be integral in design and recessed into the apparatus body sides, sized to provide easy access to all interior areas of the compartment. All doors shall be consistent in fit and finish with the apparatus body. All doors shall be weatherproof and maintain contact with all points of the weather stripping. **Weather stripping shall be the original bulb type, attached to the opening flange of the compartment openings for improved door seal.** The interior surface of the compartment door shall be a white gel coat surface of a quality and uniformity equal to that of the exterior surface of the apparatus body. The compartment doors shall be cored with industrial grade closed cell PVC foam, or composite material, of the correct thickness.

Door Hinges and Retainers

Door Hinges

Doors shall be equipped with stainless steel hinges and hardware. Hinge pins shall be non-removable. All side compartment doors shall open to a 90-degree angle without hindering operations of other compartment doors. Doors shall not interfere or make contact with the body or any other open doors. Rubber bumpers and/or stainless-steel shields shall be in place to prevent damage wherever the potential exist for doors to come in contact with other apparatus components.

Retainers

All vertically-hinged, outward-opening compartment doors shall be provided with an over center door check to hold the door in the desired position. The door check shall be attached to the top of the door and fastened to a stainless-steel plate bolted into the body and door. All vertically-hinged, outward opening compartment doors shall be capable of being closed with one hand, allowing a free hand to hold equipment or supplies.

Each horizontally hinged door shall be equipped with add-a-link style (removable) retainers and small rubber bumpers installed on the body fenders to allow full 180-degree opening for improved access into the compartment. A piece of black heat shrink shall be utilized over the crimp.

All horizontally-hinged, overhead lift-up, outward opening compartment doors shall be provided with two (2) extending, gas cylinder type hold open devices, one (1) mounted vertically on each side of the compartment door opening. The pressure rating of the gas cylinders shall be carefully matched to the size and weight of the compartment door and shall hold the compartment door securely open to a greater than 90-degree angle without additional support. The gas cylinder hold openers shall dampen the upward movement of the compartment door while opening and shall permit the closing of the compartment door without the need to release any type of manual locking devices. All horizontally-hinged, overhead lift-up compartment doors shall be capable of being closed with one hand, allowing a free hand to hold equipment or supplies.

Door Latches

Unless were noted, all compartment door latch assemblies shall be installed with threaded fasteners, shall not be welded, and shall be easily removable for servicing or replacement. All door latch assemblies shall be of a flush-mount, "D-Handle" design, with all external components fabricated from polished stainless steel. All latches shall be of a two-step slam-type design, with a single-point latching operation. Matching striker bolts shall be utilized with all latch assemblies. All striker bolts shall have slotted mounting holes and shall be attached with bolts to captive steel plates in the body structure for strength and ease of adjustment. The strikers shall be installed on a level axis and shall not be crooked. Welded striker bolts or plates shall not be acceptable.

All hardware shall be corrosion resistant and suitable for its intended use. All nuts and bolts shall be stainless steel. Stainless steel nuts shall be the self-locking type. Each lock shall be configured so that in the vertical position it is "UNLOCKED" and in the horizontal position it is "LOCKED".

Shelving Construction and Layout

Each shelf shall be one-piece pultruded fiberglass with nylon reinforced composite end caps and provision for dividers on 2.00-inch centers. Shelves shall be designed to maximize usable space within the compartment, prevent items from sliding off, and be adjustable. Shelves shall be capable of supporting a minimum 250-pounds unsecured load without being damaged or permanently distorted.

Street Side Front:
- Three (3) adjustable shelves

Street Side Center:
- One (1) adjustable shelf

Street Side Rear:
- Three (3) adjustable shelves

Curb Side Front:
- Three (3) adjustable shelves

Curb Side Center:
- One (1) adjustable shelf

Curb Side Rear:
- Open

Shelf Dividers and Retention Clips

One (1) package of shelf dividers and retention clips shall be provided for each shelf described elsewhere in this specification.

Composite Adjustable Shelf Channels

Vertically-mounted composite shelving tracks shall be provided in all enclosed body compartments, except driver side upper middle, passenger side upper middle and passenger side lower rear compartment, for the current or future installation of infinitely-adjustable shelving, slide out trays or equipment brackets. The composite tracks shall allow for the shelves to be adjustable every two inches vertically utilizing nylon reinforced composite shelving standards with embedded stainless lock nuts.

Compartment Lighting

Each compartment shall have continuous LED light strips. The LEDs and electronics shall be enclosed in a 5/8-inch diameter Lexan tube that is sealed at both ends with rubber caps to create a waterproof environment and be suitable for mounting in a wet location. The tube shall rotate to adjust the beam direction as required. The lighting shall be secured with molded nylon mounting clips. The lighting in all compartments shall start at the bottom of the compartment and extend up the sides and across the top to provide lighting around the perimeter of the compartment. Placement of the light strips shall be such that they are protected from being impacted by compartment contents or during removal/placement of equipment. The purpose of the LED strip lighting is to provide even lighting throughout the compartment while minimizing shadows and dark zones caused by shelving or equipment stored in the compartment. The lighting shall carry a five (5) year warranty.

Compartment Venting

Venting shall aid in air circulation and reduce fumes caused by fuel storage. When placed in doors, these round vents shall compliment fit and finish of the body and not impede door function.

- The driver's side center compartment shall be vented at the upper door face.
- The driver's side aft compartment shall be vented at the door face and compartment rear wall.

Stainless Steel Drip Trays shall be provided in all the vented compartments **D-2, D-3 and P-3.**

A permanent and compliant red/white placard noting fuel storage shall be in plain view and permanently affixed to the exterior surface of each door.

A permanent warning label shall be affixed to the exterior surface of the passenger side rear compartment. The label shall read "DANGER: Do Not Store Flammable Liquid or Combustible Material in this Compartment". See placard below.

Storage Compartments

Side compartments with flush doors shall be provided on both the driver and passenger sides for storage of equipment such as long handled hand tools, power tools, hoses, fittings, fuel, camping gear, and other supplies. Compartment interiors shall be completely open except for latch and shelving hardware; obstructions caused by body framework, lighting mounts, or other structural features shall not be accepted. The clear inside depth for each compartment shall be no less than 19.00-inches behind the closed door excluding latch hardware.

Each storage compartment shall be sealed to prevent the entry of water, dust or other foreign matter during operations, there shall be no compartment venting holes except those specified for fuel storage. To prevent water entry, compartment openings shall be equipped with rubber weather stripping door seals. Hardware attachments to any portion of a storage compartment shall be completely sealed with weatherproof silicon. Compartment seams shall be completely sealed with weatherproof silicon.

Compartments shall be able to successfully pass a weatherproof test. In order to pass, the interior of the compartment shall remain dry after water from a typical garden hose has been applied to the exterior of each compartment top and side door area for 2-minutes.

Each compartment shall be equipped with commercially available replaceable pop-out style drain plugs for drainage in the event of moisture entering the compartment. The drain plugs shall be positioned in locations that are least prone to damage. The drain plugs shall be sealing type to prevent dirt and debris from entering the compartment; plugs shall be removable from the inside only.

The bottom of each compartment shall be equipped with 3/4-inch thick Dri-Dek black floor matting. The matting shall provide a solid surface with even support that doesn't allow bending or folding. The matting shall be cut to fit the exact dimension of the compartment. The matting shall be removable without the use of tools. The matting shall provide maximum drainage and traction and feature fungus, mold and chemical resistance.

Driver Side Storage Compartment(s)

The driver's side lower module of the apparatus body shall have approximate overall dimensions as specified. It shall consist of four (4) compartments, each with specified approximate clear depth behind the door when

the door is shut. Each compartment shall have a “flow through” vent provided to supply air flow and minimize moisture unless designated as fuel storage.

Lower module dimension:	108.00-inches wide x 24.00-inches deep
Clear Depth:	22.00-inches

One (1) rescue style compartment shall be provided forward of the rear wheels, with approximate inside dimensions as specified. The door shall be vertically-hinged and shall have approximate clear door opening as specified.

Compartment dimension:	37.00-inches wide x 62.00-inches high x 24.00-inches deep
Clear door opening:	28.875-inches wide x 53.00-inches high

One (1) compartment shall be provided center above the rear wheels, with approximate inside dimensions as specified. The door shall be a horizontally-hinged, drop-down door, and have an approximate clear door opening as specified.

Compartment dimension:	40.00-inches wide x 22.00-inches high X 24.00-inches deep
Clear door opening:	38.375-inches wide x 15.625-inches high

One (1) compartment shall be provided center above the lower center compartment and lower aft compartment, with approximate inside dimensions as specified. Compartment shall have access from both outside and inside of load bed storage area. The door shall be a horizontally-hinged, overhead lift-up door, and have an approximate clear door opening as specified. **Black cargo netting shall cover the opening on the inside of the load bed area and shall be secured with heavy-duty buckles.**

Compartment dimension:	71.00-inches wide x 22.00-inches high X 24.00-inches deep
Clear door opening:	66.875-inches wide x 14.50-inches high

One (1) compartment shall be provided aft of the rear wheels, with approximate inside dimensions as specified. The door shall be vertically-hinged and shall have an approximate clear door opening as specified.

Compartment dimension:	31.00-inches wide x 42.00-inches high x 24.00-inches deep
Clear door opening:	24.75-inches wide x 34.50-inches high

Passenger Side Compartment(s)

The passenger's side lower module of the apparatus body shall have approximate overall dimensions as specified. It shall consist of four (4) compartments, each with specified approximate clear depth behind the door when the door is shut. Each compartment shall have a “flow through” vent provided to supply air flow and minimize moisture unless designated as fuel storage.

Lower module dimension: 108.00-inches wide x 24.00-inches deep

Clear Depth:	22.00-inches

One (1) rescue style compartment shall be provided forward of the rear wheels, with approximate inside dimensions as specified. The door shall be vertically-hinged and shall have approximate clear door opening as specified.

Compartment dimension:	37.00-inches wide x 62.00-inches high x 24.00-inches deep
Clear door opening:	28.875-inches wide x 53.00-inches high

One (1) compartment shall be provided center above the rear wheels, with approximate inside dimensions as specified. The passenger's side door shall be a horizontally-hinged, drop-down door, and have an approximate clear door opening as specified.

Compartment dimension:	71.00-inches wide x 22.00-inches high x 24.00-inches deep
Passenger side clear door opening:	66.875-inches wide x 14.50-inches high

One (1) compartment shall be provided center above the lower center compartment, with approximate inside dimensions as specified. Compartment shall have access from both outside and inside of load bed storage area. The door shall be a horizontally-hinged, overhead lift-up door, and have an approximate clear door opening as specified. **Black cargo netting shall cover the opening on the inside of the load bed area and shall be secured with heavy-duty buckles.**

Compartment dimension:	71.00-inches wide x 22.00-inches high X 24.00-inches deep
Clear door opening:	66.875-inches wide x 14.50-inches high

One (1) compartment shall be provided aft of the rear wheels, below the upper horizontal compartment, with approximate inside dimensions as specified. The door shall be vertically-hinged and shall have an approximate clear door opening as specified.

Compartment dimension:	31.00-inches wide x 20.00-inches high x 24.00-inches deep
Clear door opening:	24.75-inches wide x 14.875-inches high

Superstructure

A fiberglass superstructure shall be provided over the rear bed area to form an enclosed walk-in storage area floor shall have approximate dimensions of 50.00-inches in width and 108.00-inches in length. The space shall have a height of approximately 70.00-inches at the highest point from floor to ceiling.

Load bed access shall be through a large walk through door at the rear. The door shall be capable of opening from the inside or outside of the compartment. **The door shall have T-Style Door open retainer (Stay) to allow for the door to be opened approx. 180 degrees and be held open with door stay.** The bottom opening of the door frame assembly shall be as flush as possible with the leading edge of the load bed floor. A "trip" guard shall be placed over the latch catch bracket to aid in preventing an individual from tripping over the catch.

The load bed storage area shall be equipped with aluminum shelving. Shelving shall be capable of supporting a minimum 300-pound load. **All interior shelves shall have quick latch cargo nets to secure items on= the shelves.**

The load bed storage area shall be configured as follows:

- A custom aluminum shelving structure shall be provided and extend the entire length of the body on the driver's side above the lower compartments. The shelving structure shall be divided into two (2) sections and each section shall have one (1) fixed shelf and one (1) adjustable shelf. The width of this shelves shall be equal to the width of the lower compartments and each shelf shall have a minimum 2.00-inch lip. Due to the superstructure being tapered, the adjustable shelf could be less than equal to the width of the lower compartments.

- A custom aluminum shelving structure shall be provided and extend the entire length of the body on the passenger's side above the lower compartments. The shelving structure shall be divided into two (2) sections and each section shall have one (1) fixed shelf and one (1) adjustable shelf. The width of this shelves shall be equal to the width of the lower compartments and each shelf shall have a minimum 2.00-inch lip. Due to the superstructure being tapered, the adjustable shelf could be less than equal to the width of the lower compartments.

- A custom aluminum shelving structure shall be provided and extended the width of the driver side and passenger side front compartments. The shelving structure shall have one (1) fixed shelf and one (1) adjustable shelf. The width of the shelves shall be equal to the width of the driver side and passenger side front compartments and each shelf shall have a minimum 2.00-inch lip. Due to the superstructure being tapered, the adjustable shelf could be less than equal to the width of the driver side and passenger side front compartments.

-- The lower shelf at the bulkhead location shall be a pullout shelf capable of supporting a minimum 250Lbs.

A placard shall be placed at the rear of the apparatus, near the top of the canopy, that reads "NOT A LOADABLE SURFACE".

Two (2) rubber vents shall be placed at the rear of the superstructure centered directly below the LED scene lights.

Four (4) recessed tied down rings shall be installed in the load bed floor area approximately 10" inboard from the compartment wall R&L and spaced evenly between the space available from approx 12.00 inches forward of the rear doors to the rear of the front shelf structure. Ties down intended to secure large items like coolers and other similar sized items.

The load-bed floor pan shall be coated with a **Rhino type bed coating** for improved traction and protection.

The spare tire storage location in the load bed area to be determined at pre-construction meeting

Storage Locker(s)

Seven (7) individual modular storage lockers, maximum four (4) lockers per side, shall be mounted to the shelf that is affixed to the top of the lower storage compartments. Each locker shall be constructed of stainless-steel and have approximate dimensions of 18.00-inches tall x 18.00-inches wide and as deep as the shelf which is approximately 24.00-inches. Each locker shall have a well ventilated hinged metal door with a slam style latch that is protected from becoming jammed by contents shifting.

Wheel Chocks

Two (2) Zephyr Industries wheel chocks shall be provided with the completed apparatus, one (1) each side. The chocks shall be yellow in color and shall be mounted vertically in a quick release mounting bracket on the rear panel of the apparatus body.

Rear License Plate Mount / Light

One (1) TecNiq, Inc. model number L11-WC00-1 clear LED light shall be provided at the rear of the body on the driver's side to illuminate the license plate. Two (2) mounting bolts, washers, and nylon locking nuts shall be properly spaced to accommodate the hole pattern of a Federal Government license plate.

Apparatus Body Trim

The vertical surface at the front of the body shall be covered with a minimum 3/16-inch-thick polished aluminum tread plate for appearance, & wear. The tread plate shall be designed so that joints are minimized and shall cover the entire vertical surface area.

The vertical surface at the rear of the body shall be covered with a minimum 3/16-inch-thick smooth aluminum plate for appication of rear chevron striping, for enhanced visibility at night. The aluminum plate shall be designed so that joints are minimized and shall cover the entire vertical surface area.

All outside vertical edges (on the four (4) outer corners) shall be equipped with polished stainless angle trim pieces fabricated to fit tightly and sealed with silicone for added protection and visual appeal.

Outside horizontal edges along the bottom of each side shall be equipped with polished stainless angle fabricated to fit tightly and sealed with silicone for added protection and visual appeal.

There shall be a minimum 1/16-inch-thick stainless-steel liner that is attached to the underside of all compartments to protect from damage caused by rocks, brush, blown tires etc. The liners shall be attached with stainless steel screws or bolted with self-locking nuts.

Grab Handles and Locations

All steps and handrails shall be NFPA 1900, current edition, compliant and approved by the Government prior to installation.

One (1) handrail shall be mounted adjacent to the rear door on the right-side exterior to aid in entering the load bed area.

One (1) handrail shall be mounted adjacent to the rear door on the left-side interior to aid in exiting the load bed area.

Windsock Mount

A telescopic windsock mount shall be mounted at the rear of the apparatus on the passenger side. The top of the pole, in the retracted state, shall be approximately 1.00-inch below the leading edge of the top of the canopy. The telescopic pole shall be a side mount push-up style pole. A fixture shall be fabricated for mounting the windsock to the top of the pole.

The moniting shall be compatible with the agency utilized windsock mounting application, possible adpator provided as necessary. to be determined at pre-con.

Spare Tire Mount

A permanent spare tire mount shall be affixed to the passenger side load bed wall at the front of the apparatus body. The position of the mount shall allow for a tire up to **245/70R19.5** and the spare tire mount shall be powder coated black.

Air Compressor

A Viair Corporation **Model 485C Dual Air Compressor System** shall be installed **in the passenger-side= front forward compartment forward off the rear wheels.** .

One (1) quick disconnect air outlet shall be installed inside the load bed area next to the load bed compartment light switch and one (1) quick disconnect air outlet shall be installed near the air compressor in the passenger front compartment. The compressor shall have an "ON/OFF" switch, tire inflation gun with 200 pounds per square inch gauge and 30 feet of coiled hose.

A 2.5-gallon air storage tank shall be supplied and located under the chassis cab in a protected location for off road use.

An air pressure guage shall be provided in an easily readable location to be determined at pre-con meeting.

General Wiring Specification

A single Original Equipment Manufacturer (OEM) battery system shall be installed consisting of matching batteries to operate both the chassis and package electrical system. A single Cole Hersee on/off switch shall be supplied by the body builder. This switch labeled "BODY MASTER ON" shall mount separately or as a part

of the master console. When in the "OFF" position, all electrical power to the apparatus fire package shall be off. The batteries shall be installed in an accessible location.

The apparatus electrical system shall remain independent of the OEM system unless there is authorization from the OEM chassis manufacturer.

The apparatus body, modules of the apparatus body, and chassis shall be individually wired as independent modules and connected as a completed unit at the final assembly via waterproof electrical connectors located in the electrical compartment. The intent of this is to be able to remove portions of the completed apparatus for major service and repair without requiring the electrical system to be cut. Seals shall be provided on each individual wire and the assembly. All GXL/SXL wiring for the apparatus body shall be within a temperature resistant harness rated at a minimum of 280 degrees Fahrenheit. All wires in each harness shall be color and function coded. Wiring shall be run along structural rails and tied in a neat and orderly manner. Wiring passing through compartments shall be protected from tears, abrasions, and cuts caused by loose items moving in the compartment space. Wiring shall comply with OEM / component manufacturers recommendations and standards.

The completed body shall be grounded to the chassis with a minimum "0" gauge wire with crimped and soldered lugs. The lug shall be bolted to the chassis after the removal of all paints, rust, etc. Additionally, a minimum 3/4-inches braided ground strap shall be furnished between the body and chassis. The ground strap shall have soldered tabs on each end and attached to the chassis as above except that stainless-steel star washers shall be used between the ground strap tab and bolt. After attachment, all ground connection points shall be sprayed (soaked) with non-hardening battery terminal sealer.

Electrical Components and Ratings

Electrical Components

All electrical components such as solenoids, speakers, motors, etc. shall be environmentally rated to a minimum of IP67 and shall be MIL-STD 810 compliant for temperature, humidity, vibration, altitude, shock, sand and dust, immersion, contamination by fluids, humidity and solar radiation.

Wire Grade

GXL or SXL Grade Rated from 60-260 degrees Fahrenheit.

Connections Terminations

Connections shall be environmentally sealed to prevent corrosion.

Loom and Ties

All wire loom and wire ties shall be rated to a minimum of 260 degrees Fahrenheit.

Indicator / Warning Light(s)

The following indicator lights are described in greater detail elsewhere in this specification:

- Battery On: There shall be a green LED indicator light visible to the driver which illuminates when the master body switch is activated. The light shall be labeled "BODY MASTER". The LED light shall be mounted adjacent to the master switch, in a position that will help reduce glare within the cab during night operations; this light may be programmed to dim when the headlights are on.

- Door Ajar "DO NOT MOVE APPARATUS": Red LED indicator light shall be provided in the cab and shall flash automatically when the ignition switch is "ON", and a lighted compartment door is "OPEN", or a chassis cab door is "OPEN".

- Low Voltage Alarm: Red LED indicator light shall be provided in the cab. The light shall flash when the apparatus 12-volt electrical system voltage drops below 11.90-volts. The LED light shall be mounted in a position that will help reduce glare within the cab during night operations.

"Do Not Move Apparatus" Alarm

There shall be an audible alarm that sounds a tone when the door ajar light is flashing and the parking brake is released.

DOT/ Clearance Lighting

Clearance lights shall be provided and mounted on the vehicle in compliance with FMVSS. Each light shall be LED and sealed from the environment. All lights shall be easily replaceable in the event of failure or damage. Each light shall be constructed from high impact-resistant plastic to prevent damage from gravel and other debris.

Tail Light Assembly

One (1) three taillight assembly shall be mounted on each side of the rear panel, two (2) assemblies total, as low as possible without affecting the functionality of the rear bumper and bumper skin. Each assembly shall consist of a Whelen 700 Series red LED stop/tail light, a Whelen 700 Series amber LED arrow turn signal light, and a Whelen 700 Series back up light described elsewhere in this specification. Each light shall be approximately 7.00-inches wide by 3.00-inches tall. All three (3) lights shall be mounted together in a polished aluminum four light surface mount vertical bezel.

Taillight Assembly Layout:
Red LED Stop/Tail Light
Amber LED Arrow Turn Signal
Back Up Light

Scene / Work Lights

Upper Zone B/D Scene Lights

Two (2) Whelen M9 Series scene lights shall be mounted on each side of the apparatus body's superstructure, one (1) per side and side facing. Each scene light head shall be centered between the warning lights described elsewhere in this specification. Each light head shall have a clear lens and be mounted in a chrome flange. The light heads shall be controlled with the "LEFT SCENE" and "RIGHT SCENE" switch located on the SPS panel in the chassis cab.

Upper Zone C Scene Lights

Two (2) Whelen M6 Series LED scene lights shall be mounted on the upper portion of the apparatus body's superstructure, one (1) per side and rear facing. Each light head shall be mounted below the emergency light head described elsewhere in this specification, have a clear lens and be mounted in a chrome flange. The light heads shall be controlled with the "REAR SCENE" switch located on the SPS panel in the chassis cab and shall also illuminate when the chassis is placed in reverse gear.

Step Lights

Four (4) 4.00-inch diameter round or rectangular LED step lights shall be mounted in the following locations with a stainless-steel security flange. The lights shall be programmed to illuminate when any of the cab doors are opened or when the "STEP LTS" switch is in the "ON" position. These lights shall be mounted in the following locations to provide step area lighting around the apparatus:

- One (1) 4.00-inch round diameter, forward facing, flush mounted on the front of the driver apparatus body
- One (1) 4.00-inch round diameter, forward facing, flush mounted on the front of the passenger apparatus body
- Two (2) 4.00-inch round diameter, downward facing, flush mounted in the rear bumper to illuminate the rear step area

Off-Road Light

One (1) PIAA Quad Series 20.00-inch dual row LED light bar, with combination spot/flood illumination, shall be provided at the front of the vehicle. The light bar shall be mounted on the middle/bottom bar of the heavy-duty front bumper and brush guard to permit maximum illumination coverage. The wiring harness shall be routed in a manner to protect it from being snagged by branches or foreign objects. The light bar shall be controlled with the "FRNT SCENE" switch located on the SPS panel in the chassis cab.

Multiplexed Electrical System

The electrical system shall be equipped with a Class 1 ES-Key multiplex solid state management system. The system shall have capabilities of performing load management functions, system monitoring and reporting, system data recording, remote diagnostics, and be fully programmable. The system shall be programmed to discontinue functions, by priority, when the apparatus 12-volt electrical system voltage drops below 11.9-volts.

Universal System Manager II

The Universal System Manager II "USM II" shall be installed within the center console. In the ES-Key network, the USM II shall be responsible for arbitrating the network variables to each module, monitoring faults and

diagnostics and controlling electrical load management functions.

Remote Diagnostic Capabilities

Remote diagnostic shall be accomplished by using a supplied USB 2.0 "A" male to "A" male cable. One (1) end of the cable will connect directly to the Class 1 ES-Key Universal System Manager II and one (1) end will connect to a laptop computer. The remote diagnostic feature(s) will be done through Class 1's ES-Key Live software.

Field Diagnostics

Field diagnostics shall be accomplished by using a Class 1 Information Center module that shall be mounted on the officer's side of the center console. The module shall provide the end user with warning messages, access to system configuration and multiplex logic statements, and operates the data logger.

SPS Switch Panel and Programming

All accessory and emergency lighting shall be controlled by a master electrical control module mounted in a location within the cab that is easily accessible by driver and operator. The module shall consist of a multiplex smart programmable switch (SPS) module of sixteen (16) lighted switches. The module shall have back lighted identification plates on a non-glare panel face illuminated when the master switch is "ON". The bundle of wires visible through the front glass shall be loomed to present a neat and professional appearance.

The function and layout of the sixteen (16) lighted switches are as follows:

Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6	Switch 7	Switch 8
Switch 9	Switch 10	Switch 11	Switch 12	Switch 13	Switch 14	Switch 15	Switch 16

Switch 1: FRONT SCENE LIGHTS
- Description: Activates/Deactivates the Off-Road LED Light Bar
- Function: Switch is press on press off
- Indicator: Indicator light is solid when on
- Requires Body Master to be "ON": No

Switch 2: UNUSED
- Description:
- Function:
- Indicator:
- Requires Body Master to be "ON":

Switch 3: DS SCENE
- Description: Activates/Deactivates the left-side LED scene lights
- Function: Switch is press on press off
- Indicator: Indicator light is solid when on
- Requires Body Master to be "ON": Yes

Switch 4: STEP LIGHTS
- Description: Activates /Deactivates the step lights on the front of the apparatus body and rear bumper

- Function: Switch is press on press off
- Indicator: Indicator light is solid when on
- Requires Body Master to be "ON": Yes

Switch 5: UNUSED

- Description:
- Function:
- Indicator:
- Requires Body Master to be "ON":

Switch 6: DIMMER UP

- Description: Adjusts the back light of the switch panel to increase intensity of the back light
- Function: Switch is single press to adjust the back light five (5) settings
- Indicator: No indicator
- Requires Body Master to be "ON": Yes

Switch 7: UNUSED

- Description:
- Function:
- Indicator:
- Requires Body Master to be "ON":

Switch 8: Unused

- Description

Switch 9: ALARM CANCEL

- Description: Cancels the audible alarm that sounds to alert the driver that a cab or compartment door is "OPEN" when the parking brake is released, or the vehicle has a low voltage condition. This alarm cancel function is reset when any of the following actions happen the chassis ignition is turned "OFF", the parking brake is set, or the switch is pressed again. **Cancels the "LOW VOLTAGE ALARM" as well.**
- Function: Switch is press on press off
- Indicator: Indicator flashes when activated
- Requires Body Master to be "ON": no

Switch 10: REAR SCENE

- Description: Activates/Deactivates the upper LED scene lights and reverse (back-up) lights
- Function: Switch is press on press off
- Indicator: Indicator light is solid when on
- Requires Body Master to be "ON": Yes

Switch 11: PS SCENE

- Description: Activates/Deactivates the right-side LED scene lights
- Function: Switch is press on press off
- Indicator: Indicator light is solid when on
- Requires Body Master to be "ON": Yes

Switch 12: CMPT LTS

- Description: Activates/Deactivates strip lighting in compartments
- Function: Switch is press on press off
- Indicator: Indicator light is solid when on
- Requires Body Master to be "ON": Yes

Switch 13: UNUSED

- Description:

- Function:
- Indicator:
- Requires

Switch 14: DIMMER DOWN

- Description: Adjusts the back light of the switch panel to dim of the back light
- Function: Switch is single press to adjust the back light five (5) settings
- Indicator: No indicator
- Requires Body Master to be "ON": Yes

Switch 15: UNUSED

Switch 16: UNUSED

Inverter System

The apparatus shall be equipped with a 2000-watt 12VDC pure sine inverter. The inverter shall be installed exactly according to the manufactures recommendation. The inverter shall have a documented minimum 2-year manufacturer warranty. The inverter shall be securely mounted in the passenger side front compartment, as high as possible.

The inverter system shall be equipped with four (4) Ground Fault Circuit Interrupter (GFCI) receptacles, two (2) duplex outlets, in the following locations:

- One (1) duplex in cab
- One (1) duplex inside rear compartment near the rear door. This duplex shall be supplied with an outdoor Duplex cover.
- Each receptacle shall be available for use whenever the inverter is on. Use of an extension cord from one outlet to power the other outlet will not be accepted.

The inverter shall be equipped with the following minimum features:
Minimum 1000-watts continuous Output Power

- 115-Volts of Alternating Current (VAC) Output
- Frequency of 110-volts, 60Hz
- Automatic overload/short circuit protection
- Automatic high battery alarm and shut-down at 15.00-volts of Direct Current (VDC).
- Automatic over temperature alarm and shut-down and automatic restart with normal temperature
- Audible warning device that sounds at 11.00-volts.
- Automatic Low Battery Shutdown at 10.5-volts.

NFPA 1900Electrical Testing

Electrical system tests shall be performed in accordance with NFPA 1900 current edition. Al the time of delivery, all documentation outlined in NFPA 1900 current edition shall be provided.

Vehicle Paint, Finish, Striping, Identification

Great Lakes WFM Support Vehicle

The chassis shall be painted by the Original Equipment Manufacturer and the apparatus body shall be gel coated to match the chassis paint color.

Paint color and code: **Bright White (Ford Oxford White)**

Paint and Finish General

The finished apparatus and chassis shall be presented in as new condition. Any dents, scratches, rust spots, or blemishes of any kind on the apparatus will not be accepted. All exposed ferrous metal surfaces that are not plated or stainless-steel shall be cleaned and prepared and shall be painted or coated. The paint or coating, including primer, shall be applied in accordance with the paint or coating manufacturers' recommendations. The paint shall be applied by individuals who have been certified by the paint manufacturer.

Apparatus Body Exterior

The exterior of the apparatus body shall be a single color gel coat finish.

Apparatus Body Interior

The apparatus body compartment interiors shall be finished with a marble color Zolatone paint to provide a durable finish.

Other Metal item Finish

All aluminum and stainless steel shall remain unpainted unless specified otherwise. Metal parts that are powder coated flat black.

Powder-Coating Standard

Items that are specified to be powder coated shall have a minimum 1-2 mm flat black powder coated finish.

Anti-Slip Surface

Horizontal walking surfaces specified to have an anti-slip coating shall meet or exceed OSHA and NFPA 1900 (current edition) requirements. Coating shall be durable and last the life of the apparatus.

Striping and Graphics

Body General

All Exterior Stripes **Deleted per Request.** Unit numbering to be provided installed.

Final approval shall be obtained prior to installation based upon a drawing or rendered photograph showing exact placement, color and configuration.

Reflective DOT Red and White Striping for Doors

A 2.00-inch white and red reflective stripe shall be installed on the vertically hinged interior compartment door face near the edge(s). Red reflective stripe(s) shall be installed on the bottom edge of the chassis cab doors. The reflective striping shall meet and/or exceed the current edition of NFPA 1906.

AgencyLettering and Numbering Graphics Package

Specific Vehicle Numbering to be determined at Pre-con for final installation

An agency identity door emblems or shields shall be provided by the agency.

All lettering and numbering shall be in Block Bold font. All lettering and numbering shall be reflective in nature and conform to the minimum requirements of ASTM D 4956, Standard Specification for reflective Sheeting for Traffic Control, Type I, Class 1 or Class 3. Finish of the lettering and numbering shall be void of air pockets, and other blemishes, and edges shall be smooth.

Final approval shall be obtained prior to installation based upon a drawing or rendered photograph showing exact placement, color and configuration.

Placards and Labels

All required signs, plates and labels shall be permanent in nature and securely attached and shall meet the requirements of NFPA 1906 current edition, and UL 969, *Standard for Marking and Labeling System*.

All signs, plates and labels shall be similar in appearance, style and design. The following signs, plates and labels shall be installed on the apparatus:

All applicable signs, plates and labels listed in NFPA 1900 current edition.

Fluids Placard

The contractor will affix a permanent placard in the driver's compartment specifying the correct type of the following fluids used in the vehicle:

- Engine Oil
- Engine Coolant
- Chassis Transmission Fluid
- Power Steering Fluid
- Front Drive Axle Lubrication Fluid
- Rear Drive Axle Lubrication Fluid
- Transfer Case Lubrication Fluid
- *Any other information deemed necessary by the contractor or its subcontractors to prolong the life of the equipment*

Dimension Placard

Great Lakes WFM Support Vehicle

The contractor shall affix a permanent placard in the driver's compartment specifying the empty/dry vehicle dimensions after constructions. The placard shall include the following minimum information:

- Overall Length
- Overall Height, the highest point on the vehicle excluding antennas when empty
- Overall Width
- Empty Weight