



211 American Avenue Greensboro, North Carolina 27409  
 Toll Free: (877)905-4678 Local: (336)297-9600  
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**ATTACHMENT A to CONTRACT NO. 90260266**  
**(Proposal and Specifications)**

MSV Series 3000-102 Equipment Truck.....**\$438,478.00**

**MSV SERIES 3000-102 CUSTOM TRUCK SPECIFICATIONS**

**BASIC VEHICLE DIMENSIONS**

Width:	Interior	96"
	Exterior	102"
Height:	Interior	83"
	Exterior	11.5'
Length:	Exterior	26'
	Interior	16' (Load Space)

**Chassis Specifications:**

**CHASSIS MANUFACTURER**

Ford

**CHASSIS TYPE**

Super Duty F-6000 4x4

**BATTERIES**

Dual 68 AH/65 AGM Battery

**BRAKES**

Power brakes – 4 Wheel disc brakes

**COOLING SYSTEM**

Fail safe cooling system

**DOORS**

Power windows and door locks



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## **ELECTRICAL CONTROLS & INSTRUMENTS**

Gauges: Engine temperature, speedometer  
2-speed windshield wiper with intermittent feature  
Dual note electric horn

## **ENGINE**

6.7Liter Power Stroke V8 turbo diesel engine compatible with B20 fuel  
Engine block heater

## **FUEL TANK**

40 gallons

## **GVWR**

22,000 lb.

## **HVAC**

Cab - Air conditioning  
Cab - Fresh air heater and defroster

## **SEATS**

Cloth Seats  
Cloth 40/20/40 split bench seat – includes: driver's side manual lumbar, 20% center under seat storage, center armrest, cup holder, storage and 4-way adjustable driver and passenger headrests.

## **STEERING**

Power steering  
Tilt wheel and cruise control

## **STEREO**

Radio: AM/FM Stereo w/MP3 Player

## **TIRES**

Tires: 245/70Rx19.5G BSW A/P

## **TOW HOOKS**

Front tow hooks

## **TRANSMISSION**

TorqShift 10-Speed Automatic



## **WHEELS**

Six 19.5 x 6.75 steel disc, argent painted  
 Dual rear wheels

## **BODY SPECIFICATIONS**

The Vendor must be able to perform the following at a minimum:

- Custom built body that meets the body builder's manual.
- Custom built cabinetry all wood products must be completely Formaldehyde-Free, non-toxic, LEED and CARB compliant. A copy of the OSHA 8-h, PEL for Workplace from an independent testing agency proving compliance must be provided with the bid.
- Electrical department with staff electricians
- Metal fabrication department with staff welders
- Upholstery department
- In-house Graphics department Certified by 3M

All workmanship, welding, and construction shall be in the best manner of the trade.  
 Workmanship shall be subject to inspection and approval by customer.

## **BATTERY MOUNTING**

Skirt-mounted battery box. This compartment will incorporate house battery and inverter. Box must be back vented to allow off-gassing of batteries. Batteries will be secured in box using an adjustable aluminum angled bracket.

## **BUMPERS**

Front: The front bumper will be Freightliner OEM Chrome Steel bumper.

Rear: The rear bumper is a step style bumper. Bumper will be mounted directly to the frame rails and painted to match the body.

## **CONSTRUCTION**

MSV custom fiberglass and aluminum body; body framework will be a welded aluminum design. Sidewall horizontal and vertical structure will be 2" x 2" x .125" aluminum tubing. All horizontal and vertical structures to be welded top and bottom. All vertical tubing will be spaced on 16" centers. Insulation will be 2" Expanded Polystyrene (EPS). Interior sub wall to be 3/16" Luan grade plywood, (finished wall will be added). The exterior will be sheeting with .125" fiberglass gel-coating skin. Exterior panel's smooth fiberglass will go through a lamination process. Lower skirt panels will be constructed of .067 aluminum sheeting with a low-profile rub rail between the upper body panel and lower skirt panel.

Roof will be constructed of 2" x 2" x .125" aluminum tubing on 16" centers with a truss system forming a contour exterior. Insulation will be 3" Expanded Polystyrene (EPS). Interior sub wall to be 3/16" Luan grade plywood, (finished wall will be added). The exterior will be .063 aluminum sheeting will go through a lamination process.



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Floor will be constructed of 2" x 2" x .125" aluminum tubing. Insulation will be 2" Expanded Polystyrene (EPS). .040 aluminum sheeting will be installed on both the underside and interior floor structure. Composite sub-floor will be installed.

#### Mounting:

0.25 Aluminum tubular trusses will be used. The body longitudinal substructure shall be bolted to the chassis utilizing full floating rubber mounting pucks. The number and placement of full floating body isolation mounts shall be determined by final design weight of the body structure, the weight ratings of the mounts and the chassis manufacturer's recommendations found in his body builder's manual.

#### Lighting:

All lights must comply with FMVSS 108. All exterior lighting will be D.O.T. approved.

### DOORS

There shall be (7) R•O•M Series IV MHS roll-up shutter doors installed with DuroStrip Integrated LED lighting. Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum.

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

Shutter door track shall be one piece design with integral overlapping flange to provide a clean finished look without the need of caulk. Door track shall feature an extruded Santoprene rubber double lip low profile side seal with a silicone co-extruded back to reduce friction during shutter operation.

Shutter bottom rail shall be a one piece double wall extrusion with integrated finger pull. Finger pull shall be curved upward with a linear striated surface to improve operator grip while operating the shutter door. Bottom rail shall have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene; it will be a double "V" seal to prevent water and debris from entering compartment. Bottom rail lift bar shall be a one piece "D" shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bar shall have a wall thickness of 0.125". Lift bar shall be supported by no less than two pivot blocks; pivot blocks shall be constructed from Type 66 Glass filled reinforced nylon for superior strength. Bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.



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Shutter door shall have a uniquely designed interior track and counter balance system to reduce header height. Counter balance system will be installed at the end of each track and will assist with the opening of the shutter. The shutter will retract along the top of the compartment; the shutter door will not roll around an operator drum.

Manual key lock shall be installed inside bottom rail. Lock rods shall be contained inside the bottom rail extrusion providing protection from any loose equipment that may come in contact and prevent the lock from functioning. Lock rods will engage the shutter side track and door frame. Key lock shall be recessed into the lift bar pivot block for a clean finished appearance.

### **ELECTRICAL**

Access: Main body wiring harness shall be fully accessible via removable raceways. The wiring harness shall be protected by automatic reset circuit breakers. Wiring shall be color-coded and numbered and flame retardant.

All wires passing through metal openings are protected by a grommet. All wiring is color coded and numbered.

### **MUD FLAPS**

Rubber mud flaps rear shall be provided.

### **STORAGE COMPARTMENTS**

Compartments to be installed for storage of portable generator and battery.

These compartments will be securely tied into body framework to avoid damage to the compartments and the equipment by road vibration and road surface faults. The latches will be locking Tri-Mark latches, keyed alike. All doors shall feature a heavy-duty Tri-Mark positive acting latch utilizing a threaded rod and dual nader-style pins, with a continuous tubular neoprene gasket to ensure a positive seal and prevent leaks. Doors will consist of extruded aluminum frame with smooth exterior sheeting and interior removable aluminum access panel for door latch lubrication and adjustment. Compartments will be a sweep out design with ventilation. All doors include stainless steel full length piano hinges. All doors to be equipped with gas struts and wind straps. LED compartment lights will be included.

### **WHEEL WELL MOLDING**

Exterior wheel well splash moldings shall be furnished at the axles and shall be pre-molded and contoured to conform to the wheel well cutouts.



## **CONVERSION PACKAGE**

### **AUDIO/VIDEO/COMMUNICATION**

#### Radios

- Customer radio charging rack will be installed in compartment #2

#### Monitors:

One (1) 55" Samsung (or approved equal) flat-screen LCD TV shall be installed in exterior drivers-side compartment with soundbar.

One (1) 42" Samsung (or approved equal) flat-screen LCD TVs installed in compartment #2

### **CABINERY – CONSTRUCTION (Rear full extension slide out tray cabinets)**

#### **All Aluminum Cabinets for Mobile Applications**

Cabinets will be constructed of 100% aluminum sheet and extrusions and will be specifically designed for installation for mobile applications. Antibacterial laminate counter tops will be installed. Drawers will be all aluminum construction and be fully integrated into the cabinet with no visible frame or surrounding box.

Drawers will feature full width extruded pull handles and integrated self-latching mechanisms, and most unlock and open using one hand at any location on the pull handle width. Cabinets and drawers will meet or exceed the specifications listed below.

### **MATERIALS**

#### Aluminum Sheet

- All aluminum sheet metal to be new 5052 – H32 alloy

#### Aluminum Extrusion

- All aluminum extrusions are to be prime billet 6063-T5 or T6 alloy architectural surface quality. Principle walls to be no less than .090" thick

#### Fasteners

- All fasteners are zinc plated, stainless steel, or aluminum. All nuts are Nyloc / Spin Lock self-locking
- Rivets of any type are not to be used



## Hardware Components

- Latches are cast zinc with polyester powder coat finish
- Hinges are continuous extruded all aluminum
- Shelf Brackets are zinc-plated steel – only brackets that allow self-mating in the same mounting slot allowing back-to-back shelf locations are permitted
- Countertops are industrial grade – Aluminum or Stainless Steel
- Drawer latches are solid molded glass reinforced Nylon
- Drawer slides are all steel, double carriage ball bearing full extension slides capable of withstanding 234 lbs. loading per drawer. Slides will disconnect allowing drawer removal
- Door back bonding tape adhesive is VHB structural tape

## Finishes

- All sheet components are coated with baked on polyester powder coat, only after forming and fabrication.
- Extrusions to receive 204-R1 Class 2 Architectural clear anodized finish.

## Fabrication

- Frames
  - Frames are fabricated from .090 wall extrusions with square cut and coped ends to conceal cut aluminum edges. Miter/folded joints are not to be used. Joints are secured with self-locking nut and fasteners must be self-locking.
  - Door hinges are secured to frame with self-locking nut and bolt hardware owner can re-alignable and replaceable without drilling or fabrication work
  - Frames are pre-punched with all required assembly and mounting slotted holes. No field drilling or cutting shall be required to facilitate cabinet assembly.

## Drawers

- All sheet components to be CNC punched from new sheet material
- Drawers are all .080" aluminum construction with welded corners
- Drawers are encased in .080" aluminum insert case designed to mount into cabinet faces and integrate with no visible frame around drawers
- Drawer to have full width extruded aluminum pivoting handle actuating twin self-actuating latches
- Drawer must unlatch and open by pulling at any location on the full width handle with one hand. Two-hand operation is not allowed. No separate tabs or levers may be used to latch drawers.
- Exterior drawer finish to be powder-coated to match surrounding cabinet
- Drawers must be fabricated in specified fractional sizes to fit any cabinet



## Cabinet Shell

- End and center panels to be fabricated of .063" aluminum sheet at overhead and wall cabinets; .080" thickness at closet and base cabinets. All punching, drilling, and forming to be done prior to finishing. All components must be CNC punched
- All cabinets to receive mounting angle bracket at perimeter
- All panels are finished on all exposed surfaces, inside and outside, after fabrication.
- Upper cabinets will include a removable access panel to access upper wire chase
- Radius corners will be used, and no sharp edges will be permitted

## Misc

- Shelves are constructed of .090" mill aluminum and all sides are hemmed over to prevent sharp edges from being exposed. Shelves must include adjustable mounting bracket and securing screw. Shelf slots to be punched in side panels or attached internal bracing. Shelves must be placed across from each other on both sides of a panel in the same mounting slots via self-mating brackets.

## CEILING

FRP or Aluminum seamless ceiling

## DELIVERY

A trained driver shall deliver vehicle. The representative will train staff on vehicle, bumper to bumper. Staff members shall be trained to operate every component of the vehicle and train other staff, if necessary. The driver must be full-time employed with vendor, drive-away and contract driver services are not acceptable, a. e person must be fully familiar and capable of training staff on every component of vehicle.

## ELECTRICAL SYSTEM

AC Electrical System:

Shall be a 120/240 VAC system rated for anticipated conversion load. System shall include 125A rated distribution panel configured with UL listed type magnetic/hydraulic circuit breakers.

The system shall be wired using UL approved, tinned copper multi-stranded boat cable. All wiring shall be color-coded: black = hot, white = neutral and green = ground. Additionally, wiring shall be labeled with machine-generated, self-laminating labels, listing circuit number and/or designation at all termination points. All wiring shall adhere to applicable NEC and FMVSS regulations.



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Wiring shall be supported on 20" to 24" centers with insulated, non-conductive clamps. Wire bundles shall be tied with trimmed nylon ties. Extreme care shall be taken to prevent chafing, abrasion, and exposure to high heat. Wiring run in external areas shall be encased in conduit to further protect against damage.

Four (4) 120-volt interior outlets will be installed per final design.

Two (2) GFCI exterior with weather resistance cover shall be installed.

**\* ALL LOCATIONS SHALL BE DETERMINED DURING PRE-CONSTRUCTION MEETING \***

**DC Electrical System:**

DC Electrical System: Shall be a 12VDC negative ground system rated for anticipated conversion load. System shall include distribution panel(s) using Type 1 automatic reset circuit breakers unless connected component manufacturers specifications require other.

All added circuits shall be protected from over-current by circuit breakers rated for a minimum of 125% of anticipated load. Circuit breaker functions shall be clearly designated by printed labels. Wiring shall be labeled with machine-generated, self-laminating labels, listing circuit number and/or designation at all termination points.

**Inverter Charger System:**

(1) 240Ah Xantrex Lithium 12V battery

(1) 2000W Xantrex Freedom XC inverter/charger

(1) Redarc BCDC Alpha25 25A DC Battery charger (to charge batteries from the chassis alternator)

**Wiring Requirements:**

All high-current battery cables utilize full-length cable runs sized to load; splices are not acceptable. Terminal ends shall be crimped with manufacturer recommended tooling and sealed using color-coded wrap.

All added wiring for 12VDC load runs shall be AWG 8,10,12, and 14, and conform to MIL-W-1678D type D. Wire terminals used shall conform to MIL-T-7928. Terminals shall be insulated with insulation grip, Type II, Class 2, and crimped with tooling recommended by manufacturer.

All added wiring shall be supported on 12" centers and bundles shall be tied with trimmed nylon ties. The entire system shall be installed to modern US automotive standards using best practices available at time of installation. Plastic grommets and/or dielectric sealants shall be



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used to protect wiring and/or looms where they pass through sheet metal, bulkheads, or structural supports. Convoluted polyethylene tubing shall be used to protect against chafing and abrasion where required. Extreme care shall be exercised to provide easy serviceability of the system in future years. Extreme care shall be taken to avoid the engine manifold, engine exhaust, muffler, or any high-heat items that may subject the wiring to severe overheating during long periods of operation. These shall be the minimum acceptable wiring standards.

### **FLOOR COVERING**

Install aluminum diamond treadplate on top of ½” composite subfloor.

### **FLOORPLAN**

Custom floorplan designed and engineered using Computer Aided Drafting (CAD) technology. Floorplan will be provided on Size B paper and designed in 3/8” scale. CAD technology will be capable of both two-dimensional line drawings.

### **GRAPHICS and PAINT**

Custom paint color Black.

Reflective vinyl graphics package per customer design.

### **LADDER**

One (1) 15” wide custom powder coated ladder shall be installed on rear of vehicle for roof access.

### **LAYOUT (per attached preliminary design)**

#### **INTERIOR**

- Bench area with storage
- Above rack storage
  - Extension poles
  - Stick chargers
  - antenna
  - ladders

#### **EXTERIOR COMPARTMENTS**

##### **Compartment #1**

- Divided vertical partitions for shields, oxygen tanks etc.
- Upper tilt/pullout tray; 90% Tilt tray, approx. 36” wide x 24” deep.



### Compartment #2

- 42" monitor
- Charging station for radios
- Open upper shelf

### Compartment #3,#4,#5,#6

- (2) Bottom tray: 70% Straight dual direction tray, approx. 36" wide x 96" deep from side to side.
- (4) Second tray: 70% Straight tray, approx. 36" wide x 24" deep.
- (8) Third and fourth tray: 90% Tilt tray, approx. 36" wide x 24" deep.

### Driver Side Rear

- 30" deep x 80" long fold-down work station
- Recessed 55" TV

### Rear Compartment

- Rollup access door
- (1) Bottom tray: 100% Straight tray, approx. 36" wide x 96" deep
  - Aluminum tool storage compartments on both sides of the tray

### Roof Storage

**STAINLESS STEEL FASTENERS** All fasteners used on System One equipment are made from 18-8 stainless steel. We spend a lot of extra money on these fasteners but we don't want to see any rust running down our ladder racks no matter how old they are. Galvanized fasteners can resist rust well for years but where the galvanized coating is broken by wrenches, lock washers or nuts run tight on their own threads, they start to rust. At that point there's no turning back. Our fasteners are all in inch (not metric) sizes and many of our nuts have self locking nylon inserts.

### Aluminum Crossmembers used on System One Ladder Racks / Truck Racks

**CROSSMEMBERS** Five crossmembers are supplied with the van contractor rig (although more are available) and van utility rigs are available with 2, 3 or 4 crossmembers. The mounting brackets are attached to the crossmembers and in the contractor rig they are, in turn, attached to the extension beams. The crossmembers can be mounted anywhere along the extension beam although prepunched mounting holes are provided in the extension beam for typical mounting locations. All of the van crossmembers are of the same profile and contain 4 recessed t-slots – 2 in the upper surface and 2 in the lower surface of the crossmember. Stiffening ribs which are used typically on 70" to 90" crossmembers are also available for van crossmembers. They mount to the underside of the crossmember and roughly double its capacity.



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Aluminum Extension Beams used on System One Ladder Racks / Truck Racks

EXTENSION BEAMS Extension Beams are supplied on Contractor Rigs to cantilever the front most and rear most crossmembers out beyond the mounting brackets. The cantilevered section of the rack allows transport of larger, more flexible cargo such as thin wall tubing, molding and siding. Their height of 5 ½" is what provides the strength for the high weight carrying capacity out over the cab area. There are 7 ¼" recessed grooves extruded into the beams to accept the colored vinyl inserts provided. The colored inserts sit below the surface of the extrusion and so are protected from scrapes and scratches. The horizontal mounting flange of the extension beams is one third of an inch in thickness and is where all crossmembers are mounted as well as accessories such as the tall side stop.

I.T.S.® (Integrated Tie-Down System) is the term used to describe the series of ladder racks, for pick-up trucks, service bodies, enclosed bodies and vans, that will accept Work Winches® as an integral part of the system. I.T.S. Gussets (pick-ups) and Brackets (vans) have a dual function: 1. They perform their usual structural purpose as part of the ladder rack. 2. They also form the stationary framework for the moving parts of the Work Winch tie-down system.

### **LIGHTING, INTERIOR**

Interior recessed 12V Tecniq Orion White LED 6" Ceiling Lights will be installed on the interior of the vehicle.

### **LIGHTING, EXTERIOR (all emergency lights will be blue flasher with clear lens)**

Six (6) Whelen M9 Scene Lights or approved equal, will be mounted on the exterior of the vehicle.

Ten (10) Whelen M9 Series LED (blue) lights with clear lens installed on the exterior of the vehicle, locations determined during the preconstruction meeting.

All emergency lighting shall be connected through a multi-plexed interface system. Features backlit buttons and LED status check at base station.

### **SAFETY EQUIPMENT**

One (1) back-up alarm  
 One (1) 360 Exterior monitoring system  
 Two (2) 5 lb. fire extinguisher  
 One (1) first aid kit  
 One (1) set of triangle flares.

### **SHORELINE**

There shall be heavy duty 120/240-volt, 30 amp. 25' Twist Loc shoreline cord provided.

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### **SIREN/PA**

Install Federal Signal Touchmaster Delta Siren with 100W speaker or approved equal.

### **WALLS**

Install smooth aluminum walls.