## 3.0 Vehicle Specifications

**Proposed Montana State University - Billings**
**Mobile Technology Lab Vehicle**
**Nomad IC26**

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# Proposed Montana State University - Billings
# Mobile Technology Lab Vehicle
**Nomad IC26**




**Representation Only – MSU -Billings vehicle will not include slide-outs**

## 1.0 General Chassis Specifications

### 1.1A Chassis

| | |
|---|---|
| Model: | 2008 Ford F650 Regular Cab |
| Drive: | 4x2 |
| GVWR: | 25,500 lbs |

### 1.2 Powertrain

| | |
|---|---|
| Engine: | 230 HP Caterpillar |
| Transmission: | Allison 2500 Rugged Duty Series Transmission |
| Clutch: | NA |
| Front Axle: | 8,500lbs |
| Rear Axle: | 18,500lbs. |
| Axle Ratio: | 5.29 |

### 1.3 Brakes

| | |
|---|---|
| System: | ABS 4 – Channel Anti Lock Hydraulic Package |
| Parking Brake: | 12” x 3” Rear Axle Mounted |
| Dust Shields: | Standard |

### 1.4 Electrical

| | |
|---|---|
| Alternator: | Leece-Neville 130 Amperes, 1950 Watt, Brush Type |
| Battery: | Dual 625 CCA Motorcraft 12-Volt Maintenance Free |

### 1.5 Exhaust

| | |
|---|---|
| Type: | Single Vertical Muffler and Tailpipe Exhausting on Right Side |

### 1.6 Fuel System

| | |
|---|---|
| Tank Capacity: | One (1) eighty (80) gallon saddle tank |

### 1.7 Suspension

| | |
|---|---|
| Frame: | 11/32” x 3 ½” x 10 15/16” Steel Frame |
| Rear Springs: | Multi-leaf |

### 1.8 Tire and Wheel

| | |
|---|---|
| Front Tires: | 11R22.5H |
| Rear Tires: | Dual 11R22.5H |

| | |
|---|---|
| Front Wheels: | 22.5x7.5 10-Hole Steel Disc, Hub-piloted, Stainless Steel Wheel Liners |
| Rear Wheels: | 22.5x7.5 10-Hole Steel Disc, Hub-piloted, Stainless Steel Wheel Liners |
| Spare Tire and Wheel: | Included per specified above tire and wheel |

**1.9 Exterior Cab Equipment**

| | |
|---|---|
| Bumper: | Full Width Chrome Steel |
| Hood: | Front End Tilting fiberglass hood and fenders assembly - Frame mounted w/ torsion bar assist (includes integral noise shield, inner plastic splash shields and mud guards. |
| Glass: | Laminated windshield, solar-tinted all around |
| Tow Hooks: | Front Standard |
| Grill: | Chrome |
| Mirrors: | Dual Sail Telescoping, 8” x 9” with 8’ x3” integral convex mirrors |
| Engine Block Heater: | Standard |
| Back Up Alarm: | Standard |
| Horn: | Dual Electric |
| Head Lamps: | Halogen front headlights |
| Exterior Lights: | Five (5) roof marker / clearance lights |
| Handle: | Exterior B Pillar assist handle |

**1.10 Interior Cab Equipment**

| | |
|---|---|
| Interior Package: | Opal Gray Vinyl Interior |
| HVAC: | Manual Air Conditioning - includes integrated heater and defroster |
| Stereo: | AM/FM Stereo / Clock / Single CD |
| Power Equipment: | Power windows with power door locks |
| Drivers Seat: | Captain's Chair with hi-back integral head restraint, folding/reclining, armrest |
| Passenger Seat: | Captain's Chair with hi-back integral head restraint, folding/reclining, armrest |
| Cruise Control: | Standard |
| Steering Column: | Tilt |
| Map Light: | Standard |
| Visors: | Multi-adjustable sun visors |

## 2.0 Vehicle Body Dimensions

| | |
|---|---|
| Overall Length: | 36’ |
| Interior Box Length: | 26’ |
| Overall Height: | 12’ |
| Interior Box Height: | 7’6” |
| Overall Width: | 8’6” |
| Interior Box Width: | 8’ |

## 3.0 Vehicle Body

Except for the steel supporting structure, the main body shall be all aluminum, capable of carrying the maximum payload allowed by the chassis. Using patented SnapLock technologies designed by Intercontinental Truck Bodies, the body shall be formed by interlocking extruded 0.100” 6063-T6 aluminum alloy panels to create a combined frame and membrane construction. The integrated framework shall be made up of ¾” x 1 ¾” x 0.100” thick tubing on 12” centers. This rivetless construction has exceptional strength-to-weight ratio and produces a body that permits tensional loads in excess of standard “post and skin” construction techniques used by other manufacturers.

The underside of the main body will be coated with a non-hardening commercial grade undercoat product to a thickness of approximately 1/8 inch for sound attenuation, corrosion resistance and abrasion tolerance.

### 3.1 Doors & Steps

One (1) 32” wide by 80” tall aluminum entrance door with tinted DOT approved safety glass windows will be installed in the vehicle. Entrance doors will be formed from .125” aluminum and full length stainless steel hinges. Entrance doors will be sealed with automotive weather stripping. Entrance doors will include heavy-duty spring loaded devices to keep the door open or closed as required and be equipped with locking paddle handle latches. Entrance doors will also include aluminum color matched ‘J’ channel rain gutters. The front curb side door of the vehicle will also include one (1) integrated combination locking deadbolt lock.

The front curb side door of the vehicle will be accessible by one (1) integrated folding step assembly with NFPA approved under chassis lighting. The integrated step assembly will be formed from .125" aluminum plate to form 10" exterior "C" channel supports and three (3) perforated aluminum steps. Step assemblies are integrated into the door frame enabling the door to close over the assemblies when the vehicle is deployed. The step assemblies will fold up into the interior of the vehicle for transportation. Step assemblies will include NFPA approved integrated tubular aluminum hand rails.

The step will include black and yellow striping to alert personnel moving around the vehicle to the location of the steps.

**3.2 Compartments**

All compartments will include 12V DC LED lighting with magnetic sensors to turn lights on and off when compartment doors are opened and closed. All compartments will include gas struts, full length hinges and a locking T-bar handle keyed to match the entrance doors.

One (1) generator compartment will be fabricated from .125 aluminum sheet continuously welded to prevent carbon monoxide from entering the main body of the vehicle. The compartment will be designed to provide fresh air intake and hot air discharge according to the generator specifications. The compartment shall include a custom vibration insulated generator mounting base to minimize vibration transfer between the generator set and the main body of the vehicle. The compartment will be fabricated with thermal and sound deadening materials to minimize the transfer of heat and sound into the main body of the vehicle.

One (1) battery compartment will be fabricated from .125 aluminum sheet continuously welded to prevent hydrogen and other battery gases from entering the main body of the vehicle. The compartment will include a venting system to allow fresh air ventilation around the batteries.

One (1) compartment will house the self-leveling equipment and be fabricated from .125 aluminum sheet continuously welded to prevent hydraulic fluid or gases from entering the main body of the vehicle.

Three (3) storage compartments will be fabricated from .125 aluminum sheet continuously welded to provide water tight storage.

**3.3 Roof**

The roof will be constructed of from a .040 continuous aluminum sheet and be able to support the weight of up to 2 personnel and any given time. Roof bows will be fabricated from 3" aluminum I-beam and be installed on 12" centers. The finished roof will be consist of no less than three (3) coats of highly flexible UV-reflective latex elastomeric roof coating consisting of a self-etching primer and a hi-hide, white top coat applied at a minimum rate of 1.9 gallons per 100 squared feet per coat for optimal thermal and weather resistant properties.

***3.3.1 Optional Roof Access***

*One (1) custom embedded mounted roof access ladder can be installed on the street side of the vehicle. The ladder will be fabricated from .125" bent aluminum sheet with 1" x 2" aluminum tube rungs. The entire assembly will be powder coated to match the finish of the vehicle and the rungs will be finished with a non-slip coating.*

**3.4 Exterior Finish**

Exterior walls shall be constructed by interlocking extruded 0.100" 6063-T6 aluminum alloy panels to create a combined frame and membrane construction. The integrated framework shall be made up of ¾" x 1 ¾" x 0.100" thick tubing on 12" centers. All surfaces will be coated with a white 2-stage urethane paint to match the chassis and include a $500 graphics package.

### 3.5 Interior Walls
The vehicle will be insulated with aluminum foil backed high density urethane rigid foam paneling to provide a minimum insulation value of R-9. Interior walls will be fabricated from 3/8" plywood screwed to the vertical support structure and finished with commercial grade carpet on the lower half and 1/8" white Luan paneling on the top half for optimal acoustical and fire resistant properties.

### 3.6 Ceiling
The ceiling of the unit will be insulated with aluminum foil backed high density urethane rigid foam paneling to provide a minimum insulation value of R-9. The finished ceiling will be fabricated from 3/8" plywood screwed to the vertical support structure and finished with 1/8" white Luan finish paneling for optimal acoustical and fire resistant properties.

Critical wiring can be accessed through wiring chase's running the full length of the curb and street sides of the vehicle. All wiring chase covers will be fabricated from 3/8" plywood covered with commercial grade fabric to match other interior fabric and screwed at a 45 degree angle on 12" centers (minimum) to the vehicle walls and ceiling.

### 3.7 Floor
The floor shall be constructed of ¾" plywood fastened to the base framework with zinc-coated wafer-head fasteners secured along a 12" grid. Fastener heads shall be sunk flush into the face of the plywood and puttied as necessary to provide a perfectly flat mounting surface. The floor will be finished with a commercial grade heterogeneous resilient sheet vinyl rubber flooring with skid and wear resistant properties. The flooring will have no seams.

### 3.8 Windows
Three (3) 18"x24" radius cornered egress windows fabricated from an extruded aluminum frame and DOT approved tinted safety glass will be installed on the vehicle.

### 3.9 Awning
One (1) adjustable 18' 12V DC powered awning will be installed on the curb side of the vehicle. The awning hardware will include a billow-proof worm gear motor, adjustable rafter arms and an aluminum protective fabric cover. All hardware will be white to match the exterior of the vehicle.

Awning controls will be located both on the wall inside the main entrance of the vehicle as well as a co-location on the bottom forward arm of the awning itself. The main awning control panel will include a master power switch to cut power to the exterior switch.

### 3.10 Time Sources
One (1) atomic clock with time, date and outdoor wireless temperature transmitter will be installed in the vehicle. The clock will automatically set itself using a low frequency radio transmission from the US Atomic Clock at the National Institute of Standards and Technology (NIST).

### 3.11 Vehicle Wiring
The vehicle will be pre-wired for voice, data, audio/video. All wiring will be separated in relation to their application. Wiring will be run throughout the vehicle with access points clearly marked and engineered for ease of replacement or additions. All electrical wiring, panel boxes, etc. will meet or exceed national standards. All appliances and components utilized will be UL listed.

### 3.12 Vehicle Stabilization
A "tube in tube" design self-leveling system will be installed with two (2) legs installed on the front chassis and two (2) legs installed near the rear wheel wells to provide the most stable platform available. This hydraulically operated design is capable of a lifting capacity of 17,500 lbs per leg. Each leg is independently controlled allowing the vehicle to be leveled on uneven terrain. The tube in tube design is engineered so lateral movement is absorbed thus protecting the hydraulic cylinder.

### *3.13 Optional Slide-outs*

*Hydraulically operated flush floor or non-flush floor slide-outs are available in various lengths depending on agency requests. Slide-outs are built with an aluminum sub frame to reduce weight while still maintaining structural integrity.*

## 4.0 Electrical System

A battery system with two (2) Trojan 27TM 12V deep-cycle lead acid batteries shall be wired in parallel to provide 420Ah of 12VDC power. Cabling to parallel batteries shall be 2awg minimum and constructed of multi-stranded copper wiring and durable PVC jacket. Cabling connecting the battery bank to the main distribution panel shall by 1/0awg minimum. Cabling ends shall be hex crimped with color-matched polyolefin dual wall shrink tubing with watertight sealant to ensure a secure and positive connection. One (1) 80A converter shall be directly connected to the system to provide both the primary source of 12VDC power for the vehicle's systems as well as providing a constant trickle-charge to the battery bank. All critical 12VDC systems shall be digitally monitored and viewed on an LCD panel. These monitored systems shall include voltage, amperage draw, amp hours and battery percentage for the 12VDC system. There shall be a programmable alarm to warn the operator of low or high voltage, amp draw or low system battery levels of the 12VDC system. All wiring will be THHN, bundled, tied, trimmed and numbered or lettered at terminal ends and protected from chafing and abrasion. Where wire passes through sheet metal, bulkheads or structural supports, plastic grommets shall be used to protect both wiring and wire looms.

All electrical system wiring meets NEC standards.

### 4.1 Generator

One (1) Onan 8KW Commercial Mobile 120/240V 27HP EPA Tier 2 Kubota D1703-M powered water-cooled 3 cylinder diesel generator will be mounted on a custom vibration insulated mounting platform, providing easy access to maintenance items and facilitating removal by forklift if required. 2/0 THHN/THWN copper wiring shall be run from the generator through 2" Caraflex NMET LiquidTite conduit into a 100 amp transfer switch. The Onan generator set will include the following features:

- Computer controlled constant speed operation
- Sound controlled housing with enclosed cooling system and muffler.
- 3-point, fully focalized internal mounting system reduces vibration
- Cummins Onan brush type, drip proof, 4 pole AC alternator
- Digital voltage regulation
- USDA approved spark arrestor
- Internal radiator
- Intake silencer
- Heavy duty air cleaner
- Over voltage, low oil, over temp, over speed, overload and AC alternator over temp shut down safeties
- Bosch electric fuel pump
- Service and maintenance from side service door
- Instant one touch stop
- Exhaust mufflers (exhaust away form vehicle)
- Quick disconnect (electrical) provisions
- Maintenance free battery with 15A trickle charger

An NFPA 110 Level 1 compliant digital monitor and generator controller will be installed in the electrical panel and display over 25 critical aspects of the 120VAC system, including real-time system voltage, amperage draw, and frequency, as well as 15 critical aspects of the 12VDC system including voltage, amperage draw, remaining amp hours and battery percentage. There shall be programmable alarms to warn the operator of over/under frequency, over/under voltage, over current, overspeed/underspeed, high or low engine temperature, low oil pressure, fuel and oil levels, and low/high voltage for the 120VAC system. Alarms for the 12VDC system include low/high battery, low battery recharge, over/under voltage and over current.

In the event of a problem, the panel shall alert the user through an audible alarm and automatically shut down the engine. Fault codes shall be stored within the panel's memory for diagnosing problems.

Fuel consumption rates are .61 US Gal./hr at 50% load and 1.02US Gal./hr. at 100% load. At full load, the generator will be able to run for approximately 78.43 hours before refueling with the included 80 US Gal fuel tank. One (1) emergency shut off valve will be included between the generator and the fuel tank.

#### 4.1.1 Noise and Vibration Dampening

As described in section 3.2, one (1) generator compartment will be fabricated from .125 aluminum sheet continuously welded to prevent carbon monoxide from entering the main body of the vehicle. The compartment will be designed to provide fresh air intake and hot air discharge according to the generator specifications.

The compartment shall include a custom engineered 4-point vibration insulated generator mounting base in addition to the 3-point vibration isolation device standard with the Onan generator set to provide an additional level of isolation to minimize vibration transfer between the generator set and the main body of the vehicle.

The compartment will be fabricated with thermal, sound deadening and fire resistant materials to minimize the transfer of heat and sound into the main body of the vehicle to prevent adverse impact on dispatch and conference operations.

### 4.2 Fuel Supply

One (1) 50 gallon fuel tank will be strictly generator use. This will provide 81.97 hours of generator operation at 50% load and 49.02 hours at 100% load.

### 4.3 Power Distribution

The power distribution panel shall consist of a powder coated steel load panel equipped with 120/240 volt, 125 amp, single-phase, three-wire AC service. All 120VAC and/or 240VAC circuit breakers will be appropriately sized for the power requirements of each engineered circuit. AC power to the load panel shall be controlled by a 50A manual transfer switch capable of managing up to 8kW of power delivered to the switch through either the shore power inlet or the onboard generator. Appropriately sized blade fuses with LED indicators shall be installed to protect the engineered 12VDC system circuits. The panel shall also contain meters for monitoring voltage, amperage, frequency, kW consumption, generator run-time hours and fuel level for the 120VAC system, and voltage, amperage draw, amp hours and battery percentage for the 12VDC system. There shall be a programmable alarm to warn the operator of high or low voltage or amp draw from the 120VAC incoming power, as well as an alarm to warn of low or high voltage, amp draw or low system battery levels of the 12VDC system.

One (1) 50A 120/240V Marinco power inlet will be installed on the street side of the vehicle. One (1) 30 foot 50A to 30A shore power converter cable with twist lock connectors will be included to facilitate terrestrial based power input to the unit..

***Optional:*** *External 30A output plugs are available to run power out to surrounding locations.*

### 4.4 AC Electrical System

Sixteen (16) 110V duplex outlets will be installed throughout the vehicle with a minimum of one (1) 110V duplex outlet installed at each workstation.

#### 4.4.1 UPS Backed Outlets

Minimum of six (6) of the twenty (20) 110V duplex outlets will be directly wired to one (1) Uninterruptible Power Supply mounted in the equipment server rack in the vehicle. UPS backed duplex outlets will be gray to differentiate from non-UPS backed duplex outlets and provide surge protection and battery backup for critical electronic equipment.

#### 4.4.2 Exterior GFCI Outlets

Two (2) 110V GFCI duplex outlets with weatherproof covers will also be installed on the exterior of the vehicle.

## 5.0 Lighting

### 5.1 D.O.T. Lighting

All D.O.T. lighting will be L.E.D. (brake, turn, parking, clearance and marker lights).

### 5.2 Interior DC Lighting

Ten (10) 12V 5700 Lumen recessed fluorescent light fixtures will be installed throughout the vehicle to provide classroom environment light. Each light will have extruded anodized aluminum housing and an injection molded acrylic lens to diffuse light.

***Optional:*** *Red diffusers can be requested for night uses.*

### 5.3 Exterior DC Lighting

Three (3) 50W Halogen Code3 exterior perimeter lights will be mounted outside the vehicle.

Two (2) exterior lights will be mounted directly above each entry door to provide sufficient lighting near doors.

Six (6) 35W weatherproof flood lights will be installed under the chassis of the vehicle to illuminate the ground around the perimeter of the vehicle and the curb side entry steps to comply with NFPA 1901 requirements.

### *5.4 Optional DC Emergency Flashers*

*Code3 or Whelen (or other) emergency flasher packages are available as an option.*

### *5.5 Optional Interior AC Lighting*

*Directional track lighting can be installed if requested. Due to heat generation by halogen track lighting, we strongly suggest the use of fluorescent light.*

### *5.6 Optional Exterior AC Lighting*

*500W 110V FRC adjustable pole mounted scene lights with Optimum light heads or Will-Burt Night Scan Chief NS6-1000A light towers can be mounted on the roof if requested.*

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## 6.0 HVAC

The vehicle will be cooled with three (3) 110 VAC, 60HZ, single phase roof mounted high efficiency AC units with a cooling capacity output of 13,500 BTU per unit. Each unit is equipped with a 1/3 HP fan motor which delivers cool air at 320 CFM.

The vehicle will be heated by five (5) 500W electric heaters with variable temperature controls.

## 7.0 Equipment Security

Vehicle doors will be keyed alike when possible. Cabinets and drawers will also have locks for additional security where applicable. All sensitive electronic equipment and/or moveable components will be secured with custom travel mounting systems.

## 8.0 Safety

### 8.1 Smoke / CO Detectors

Two (2) NFPA and UL approved combination smoke and carbon monoxide detector will be installed in the vehicle.

**8.2 Fire Extinguishers**
Two (2) NFPA and UL approved five (5) pound dry chemical fire extinguisher will be installed in the vehicle.

**8.3 Wheel Chocks**
The vehicle will be equipped with one (1) pair of high tensile strength aluminum wheel chocks with large rear-opening hand grips and double rows of rugged teeth to grip various surfaces. Wheel chocks comply with SAEJ348 and NFPA 1901-03 standards. Aluminum wheel chocks will be stored in easily accessible horizontal choc holders.

**8.4 First Aid Kit**
One (1) basic first aid kit will be included.

**8.5 Reflective Triangles**
One (1) set of reflective triangles will be included and installed in the storage compartment of the vehicle.

**8.6 Backup Camera**
One (1) waterproof 10G rated 1/3"color CCD backup camera with electronic auto iris control, low illumination image sensor and built in microphone will be mounted to the rear of the vehicle.

The backup camera will be directly wired to one (1) 7" high resolution, low reflection TFT LCD monitor mounted in the cab of the vehicle. The monitor includes auxiliary video inputs for GPS or other A/V devices and an A/V output for recording camera images if required.

**8.7 Safety Plaques**
One safety plaque will be mounted on dash of vehicle and will display the final overall height and a payload capacity of the vehicle.

**9.0 Workstations**
Nine (9) workstations will be fabricated from ¾" maple veneer plywood and ½" MDF with Wilsonart HD laminate tops, beveled edging to prevent chipping and personal injury, powder coated 1"x 1" x 1 1/16", continuously welded tubular steel countertop supports. All workstations will include a pencil drawer, countertop grommet plus keyboard and mouse tray.

One (1) workstation will be designated as the instructor's workstation and will have easy access to electronics rack and rear television display.

Each workstation will be equipped with one (1) rolling task chair as described in Section 9.1 and secured with Nomad Protect secure travel mounts.


*Reference picture only*

### 9.1 Workstation Chairs

Nine (9) managerial mid-back chairs will be included and secured by Nomad Protect travel mounts while in transit. The chairs will feature hip-pivot motion, pneumatic seat height adjustment, 360 degree swivel, tilt, tilt lock and fixed arms. All chairs will have a protective plastic edging to protect chair from damage. Chairs will be weight rated to 250 lbs. Increased weight capacities are available upon request.

## 10.0 Cabinets

Ten (10) feet of overhead cabinetry will be installed with five (5) feet on both the curbside and on the streetside of the vehicle near the rear.

All overhead cabinets will be fabricated from aluminum panels, aluminum extrusions and fasteners. Aluminum panels will be 5052-H32 alloy, extrusions will be prime billet 6063-T5 or T6 alloy with principal walls no less than .090 thick. All fasteners are zinc plated stainless steel or aluminum. Cabinet latches are cast zinc with polyester powder coat finish, hinges are continuous extruded aluminum and shelf brackets are zinc-plated steel. All sheet components will be CNC punched from new sheet aluminum and coated with baked on polyester powder coat after forming and fabrication have been completed. All aluminum extrusions receive 204-R1 Class 2 Architectural clear anodized finish.

Cabinet 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 bolt hardware. All frame components are owner replaceable. All fasteners must be self-locking.

Overhead doors are equipped with a mechanical folding hold open mechanism to automatically hold door to an approximate 85-degree opening. Doors will be equipped with full length pivoting handles with self-latching, independently sprung latch mechanisms.

Shelves, where applicable, are constructed from .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.

### 10.1 Overhead Cabinet White Board Finish

Overhead cabinet doors will be finished with custom dry/wet erase marker board powder coat finishes for ease of writing and erasing temporary data.

## 11.0 Communications

The main body of the vehicle will be engineered to support RF, wireless LAN and wired network based communication systems. Cat5e Ethernet cabling will run from a data communications rack to pre-determined locations in the interior of the vehicle and the Communications I/O panel to provide voice and data communication access.

One (1) vibration isolated 42U 19” electronics rack will be integrated into rear area of the vehicle to house on-board electronics equipment and supply additional space for future expansion.

### 11.1 Phone Communications

The vehicle will be wired to support eight (8) incoming and eight (8) outgoing telephone lines. Terrestrial or other incoming phone lines will enter through a curb side Communications I/O Patch Panel. All phone cabling will terminate in one (1) Panduit DP245E88110U patch panel in the data communications rack.

### 11.2 Data Communications:

The data communications network will be housed in one (1) locking 19" EIA compliant enclosed and ventilated four post server cabinet mounted in the rear of the vehicle near the instructor’s workstation. The server cabinet will be powder coated and contain one (1) rack mounted web managed Dell 24 port PowerConnect 2724 switch, one (1) rack mounted APC 3500VA Smart-UPS battery backup, one (1) APC 120V / 20 Amp 14-Outlet basic rack PDU, one (1) Zyxel Zywall II router and two (2) Panduit

DP245E88110U patch panels. All network cabling will be run behind vehicle walls and terminate at each workstation, the equipment storage rack and the curb side patch panel.

The UPS System will be configured to allow a manual transfer between UPS backed power or shore power.

#### *11.2.1 Optional Satellite Internet*

*One (1) .96m AVL self-pointing satellite Internet antenna with 4W BUC and PLL LNB can be installed on the roof. One (1) set of iDirect Infinity 3100 Series satellite modems will be installed in the vehicle to provide high speed Internet to the vehicle network. A variety of bandwidth plans are available and must be purchased separately for satellite service.*

### *11.3 Optional Radio Communication*

*UHF, VHF, 900MHz or RoIP are all available upon request.*

## 12.0 Audio / Video (A/V) System

One (1) four (4) zone four (4) source Audio/Video controller and amplifier matrix switch will be installed in the equipment rack. The A/V system will allow IR or keypad control of up to four (4) source components distributed to four (4) zones with expansion capacity to eight (8) zones. System is programmable and employs intelligent power management for positive device control.

Two (2) pair of 100W Poly Planar flush mount speakers will be installed in the ceiling of the vehicle with the ability to produce sound from any of the four (4) A/V components connected to the A/V distribution system.

### 12.1 TV Monitor

One (1) 42" LCD television monitor will be installed on the rear wall of the vehicle. This monitor will be connected to the Audio Video system allowing information to be displayed from a number of sources.

### 12.2 DVD/VCR Unit

One (1) combination DVD / VCR unit will be installed in the rack and be connected to the A/V distribution system.

### *12.3 Optional Satellite TV*

*Satellite Television is available upon request.*

### *12.4 Optional Local TV*

*Local Television is available upon request.*

### *12.5 Optional Bi-Directional Screen*

*A proprietary Nomad briefing screen can be installed inside the vehicle and include a custom, weather tight, R-7 insulated wall and will include a mounted 36"x48" rear projection two-way briefing screen with a Lumen gain factor for indoor/outdoor briefings. Briefing materials may also be displayed on the pull down screen. Utilizing the projector agency personnel can display screen shots or video from any computer on the WLAN.*

## 13.0 Custom Features

### 13.1 Galley

The galley will be installed in a custom aluminum cabinet and include one (1) Sharp 110 Volt 1100W stainless steel microwave, one (1) Sharp 110V refrigerator/freezer, and one (1) Black and Decker 10-cup automatic coffee maker.

### 13.2 Simulator Storage

Nomad Technologies will construct a two (2) position removable countertop for storing and displaying simulators. The first setting will be at standard seated height. The second will be set at a standing countertop height.

### 13.3 Laptop Storage Cart
Nomad Technologies will allocate a space with lashing points for MSU – Billings current Laptop Storage Cart. This space will also include construct a two (2) position removable countertop for storing and displaying simulators. The first setting will be at standard seated height. The second will be set at a standing countertop height.

### 13.4 Folding Ramp
Nomad Technologies will include one folding ramp, which will be stored in an under chassis compartment, for easy removal of simulators using a hand cart.

## 14.0 Work Plan
One (1) finalized pre-project Work Plan will be submitted to the MSU – Billings within fourteen (14) days after successful contract negotiations have been completed. The Work Plan will include a narrative on the services to be performed during the project evolution, a preliminary Project Plan, a Quality Assurance Plan, a Project Schedule, a Pre-Delivery Inspection Process, description of the Product Training Program, Engineering Drawings and a Warranty/Warranty Process description. This section will also include a flow chart on the proposed project management structure, manpower allocation and a clear description of how the management structure and assigned personnel fit into the work program and how staff assignments will vary over the project time frame. One (1) team organizational chart will be included to show the reporting relationships of those personnel assigned to this project.

One (1) project manager will be assigned to this project and be the primary contact for the MSU - Billings. An alternative project manager will also be assigned should the primary project manager take a scheduled vacation or unforeseen sick day. Any and all questions relating to all stages of the project will be handled through these points of contact.

### 14.1 Pre-Delivery Inspection
One (1) custom MSU – Billings Web Account will track project progress and will include weekly updates on construction pictures, change orders, schematics, bids and additional project information.

### 14.2 Product Training Program
After delivery, one (1) day “Train the Trainer” training and familiarization class on vehicle functions will be included and scheduled to best coincide with MSU – Billings schedule requirements. A total of eight (8) hours of training will be provided by Nomad Technologies.

Product manuals, as built schematics and training materials will also be included with the vehicle. One (1) draft training course outline will be provided to the MSU – Billings to be approved prior to delivery to ensure that the training procedures do not conflict with MSU – Billings Standard Operating Procedures.

### 14.3 Acceptance Testing
All systems will be tested to verify system performance prior to unit delivery to the MSU - Billings. System performance data will be recorded in a standardized format acceptable to industry standards and dated, signed and submitted to the MSU – Billings with delivery documents.

### 14.4 Warranty
Nomad Technologies warrants all apparatus and effective materials and workmanship for a period of two (2) years from date the vehicle is placed in service.

The vehicle chassis, axles and aluminum superstructure will be additionally warranted from cracks and failure for a period of three (3) years or 36,000 miles from the date the apparatus is placed in service.

All tires, batteries, electrical devices and other miscellaneous system components shall be covered by their respective manufacturer’s warranty’s or guarantees for a minimum of one (1) year from the date the apparatus is placed in service. Nomad will act as the primary coordinator for warranty claims involving these respective manufacturer’s warranties.

All warranties shall commence the date the apparatus is first placed in service.

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**14.5 Manual**

Upon vehicle delivery, two (2) complete vehicle manuals and two (2) complete vehicle CD manual will include the following:

1. Operations manual
2. Start up / Shut down sheets
3. Individual component manufacturer instructions and parts manuals
4. Warranty forms
5. 'As-Built' body layout schematics
6. Routine service forms and documentation

**15.0 Delivery**

FOB Destination: Billings, Montana.

*Nomad reserves the right to discontinue models and to change specifications or design at any time without notice and without incurring obligation. Descriptions and specifications contained in this publication provide no warranty, expressed or implied and are subject to revisions and editions without notice.*