



**NOMAD
GCS
COMPANY
PROPOSAL**

**NORTH CAROLINA
SHERIFF'S ASSOCIATION**
NOMAD-TCV

WHEN EVERY MINUTE MATTERS



Nomad Global Communication Solutions, Inc.
Tactical Command Vehicle (TCV)

1. CHASSIS SPECIFICATIONS

- A. Ford F350 Dually 4x4 Quad Chassis Cab
 - 1. Engine: Powerstroke 6.7L OHV Turbo Diesel V8
 - 2. Transmission: TorqShift 6-speed Select Shift automatic with overdrive
 - 3. GVWR: 14,000 lbs.
 - 4. DOT seating for four (4) personnel
 - 5. Dual rear wheels
 - 6. Bucket seats with matching premium cloth both forward and rear seating.
 - 7. Factory white exterior
- B. Off-Road
 - 1. DEF tank protection
 - 2. Skid plate package
 - 3. One-piece cover for radiator and front bumper openings
 - 4. Recovery hooks
 - 5. 3" lift kit package
 - 6. Custom heavy-duty emergency grade bumper
 - a. Winch access cover door
 - b. 2" receiver and OEM tow hook mounts
 - c. Black powder coated
 - 7. OPTION: 12,000lb Warn winch with tethered controller
- C. OPTION: Vertical Exhaust
- D. Integrated Cab Center Console
 - 1. Designed to accommodate radio heads and emergency light controls
 - 2. Integrated interlock, battery disconnect and leveling leg retract controls
 - 3. Four (4) USB charging ports
 - 4. One (1) 12V power socket
 - 5. One (1) 300W DC-AC inverter
 - 6. Two (2) armrests
 - 7. Two (2) cupholders
- E. Additional Features
 - 1. Shift on the fly four-wheel drive
 - 2. Engine block heater
 - 3. Rear 40-gallon fuel tank
 - 4. Cast aluminum fuel fill shroud with locking fuel cap
 - 5. Mud flaps
 - 6. Exhaust brake
 - 7. Auxiliary external transmission oil cooler
 - 8. Wheels: 17" black anodized aluminum
 - 9. Tires: LT235/80R17E all-terrain
- F. Convenience Package
 - 1. Power windows
 - 2. Power door locks w/ remote key fob
 - 3. Driver/passenger 6-way power seat adjusters
 - 4. Black rubberized floor coverings
 - 5. Air conditioning
 - 6. Heated power-adjustable side mirrors
 - 7. Cruise control
 - 8. AM/FM/CD/MP3 stereo
 - 9. Backup alarm
 - 10. Leveling system



2. Nomad Total Command (NTC) Training, Safety & Automation System

NTC is a fully custom Nomad designed and developed automated vehicle control system. This system is designed to safely deploy a vehicle to a complete operational state, as well as safely stow a vehicle at the completion of the mission.

- A. One (1) integrated intelligent touchscreen tablet with a 7.8" minimum viewable screen size will be used as the control screen. Integrated mounting system within truck cab for use while in transit. Removable for remote use exterior to vehicle or within rear command body.
- B. One (1) integrated intelligent touchscreen with a 7.8" minimum viewable screen size will be used as the control screen, permanently mounted in the rear command body.
- C. Dashboards are available to customize both information and controls onto a single user dashboard screen.
- D. NTC is NIST 800-171 compliant for Access-Control, Logging, Identification / Authentication, etc.
- E. Integrated Deployment Wizard works like a trainer that deploys with the vehicle on each deployment to provide step-by-step prompts within NTC to ensure proper setup and shutdown of all critical systems, reducing training time and increasing consistency, effectiveness, and safety of deployments.
 - 1. The Deployment Wizard further assists to ensure that the order of deployment is correct for every deployment, regardless of who is operating the vehicle.
 - 2. Deployment Wizards can be customized and redesigned to allow for multiple deployments including but not limited to maintenance deployments, training exercises and regular operations.
- F. When connected NTC will permit personnel with the proper authority to be able to control the vehicle's systems with wireless web-enabled devices as applicable.
- G. Integrated system deployments are fully controlled through the tablet's touchscreen interface.
 - 1. Automatic incoming AC power management (if applicable)
 - a. Touchscreen display shows incoming line voltage and frequency.
 - b. NTC will detect reverse polarity from shore or generator inputs and will not permit power to be received from that source until polarity is corrected.
 - c. System will assess if incoming power is safe for system and will only switch over to shore or generator if it passes diagnostic tests of system.
 - d. System includes manual controls to switch between shore and generator power sources.
 - 2. Generator (if applicable)
 - a. Touchscreen controls to START and STOP Generator.
 - b. System includes secondary, manual controls for backup/emergency START and STOP of the Generator.
 - 3. Auto-Leveling System (if applicable)
 - a. Touchscreen controls provide Auto-level and Auto-Retract control of leveling system.
 - b. Includes integrated level sensors.
 - c. Includes secondary, manual controls for backup/emergency operation of the leveling system.
 - 4. HVAC System (if applicable)
 - a. Touchscreen controls provide heating and cooling from roof mounted AC unit and heating from an electric forced air heater.





5. VSAT Antenna (if applicable)
 - a. Touchscreen controls deploy and stow the VSAT antenna (if applicable).
 - b. System includes secondary, manual controls for backup/emergency operation of the VSAT antenna.
6. UPS (if applicable)
 - a. Touchscreen controls turn on and off the UPS system when there is Power to the UPS.
 - b. Touchscreen display shows incoming line voltage, battery life in minutes.
7. Battery Monitor
 - a. Touchscreen display shows battery voltage, and amp meter.
 - b. Physical display shows same information.
8. Awning (if applicable)
 - a. Touchscreen controls extend and retract the awning.
 - b. System includes secondary, manual controls for backup/emergency operation of the awning.
9. Pneumatic Mast (if applicable)
 - a. Touchscreen controls extend and retract functions of the mast.
 - b. System includes secondary, manual controls for backup/emergency operation of the mast.
10. Exterior Scene Lights (if applicable)
 - a. Touchscreen controls turn exterior scene lights on and off.
 - b. System includes secondary, manual controls for backup/emergency operation of the scene lights.
11. Exterior Ground Lighting (if applicable)
 - a. Touchscreen controls turn exterior ground lights on and off.
 - b. System includes secondary, manual controls for backup/emergency operation of the ground lights.
12. Interior Lighting
 - a. Touchscreen controls turn interior lights off by room.
 - b. System includes secondary, manual controls for backup/emergency operation of interior lights.
13. Interlocks
 - a. System will have interlocks on applicable systems to prevent the truck from starting if interlocks are not "safe."
 - i. Mast
 - ii. Awning
 - iii. Doors
 - iv. Leveling Legs
 - v. VSAT
14. Intelligent Routing Network Control (if applicable)
 - a. NTC grades available WAN connection based on jitter, latency, and speed/throughput. A score is applied to the connection and displayed on the screen for the user to see.
 - i. A custom score may be added to determine connectivity to customer home base.
 - ii. Scores are automatically re-evaluated every 10 minutes.
 1. This time period is customizable based on user preference.
 - iii. Re-evaluation does not interrupt or impede current traffic flow.
 - b. System will select the WAN connection based on the highest score based on jittery, latency and speed/throughput. Scoring weight may be manually adjusted and will be displayed in the interface.
 - i. System will not auto switch connections until all voice traffic has stopped, (IE may not interrupt ongoing call)
 - c. User may manually force system to specific connection at will.
 - i. System will continue grading connections while in manual mode and display scores.



- ii. System must visually indicate it is in manual selection mode.
- d. The network system must operate independent of the vehicle control system. If the vehicle control system is down or disabled, the network gear will continue to operate.
 - i. If VSAT is deployed and connection is active, system will default to satellite.
 - 1. If any other connections are available and the VSAT is deployed, the router will default to VSAT.
 - ii. If Terrestrial is available, use terrestrial.
 - 1. Unless the Satellite is available, use VSAT.
 - iii. If Cellular A is available, use Cellular A.
 - 1. Unless Satellite is available, use satellite.
 - 2. If satellite is unavailable, but terrestrial is available, use terrestrial.
 - 3. If both satellite and terrestrial are unavailable, but a Second Cellular connection is available, the router will use the connection with the highest signal strength.
 - iv. If Cellular B is available, use Cellular B.
 - 1. Unless satellite is available, use satellite.
 - 2. If satellite is unavailable, but terrestrial is available, use terrestrial.
 - 3. If both satellite and terrestrial are unavailable, but a second cellular connection is available, use the cellular connection with the highest signal strength.

3. COMMAND BODY – EXTERIOR FEATURES

- A. All aluminum construction for body creates optimal strength to weight, while providing corrosion resistance.
- B. Design Characteristics
 - 1. Body will be a rugged emergency service grade body with multiple non-parallel planes to complement the unique contours of the truck's cab and maximize aerodynamics while optimizing the interior workspace.
 - 2. Body layout will maximize viewing of aerial and land resources through the Command window package.
- C. Command Body Structural Details
 - 1. Main Body Design
 - a. 3" aluminum tubing floor construction
 - b. 2" x 2" x 0.095" aluminum tube wall construction
 - c. Exterior wall and roof skins
 - i. 0.090" smooth aluminum (minimum)
 - ii. Custom water jetted for all external hardware and pass through grommets. To ensure full paint coverage behind all external hardware and that there is no damage caused from cutting/drilling, it is not permissible to cut or drill any openings in the exterior skins after they have been painted.
 - iii. Fully primed and painted prior to being attached to the body's framing.
 - iv. To ensure a watertight enclosure and to improve the appearance of the vehicle, no mechanical fasteners shall be permitted in securing the exterior skins to the framing. Sheets will be attached with structural adhesive.
 - d. Rear bumper
 - i. Integrated NFPA approved aluminum non-skid covering
 - ii. Class-5 towing package with 2" receiver
 - iii. One (1) fixed-mounted female dual socket provides both 7-way and 4-way connections.
 - e. Materials Coating
 - i. Exterior to be primed and painted with automotive grade paints, color-matched to truck chassis.



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- ii. Underchassis steel and aluminum to be fully undercoated with a black gel seal rust preventative, sound deadening undercoating. Coating dries firm and non-tacky and will not crack or peel.
- f. Command Body Entry Doors
 - i. Two (2) multi-plane entry doors will be installed on each of the curbside and streetside of the command body.
 - 1. Forward doors to hinge at the front
 - 2. Rearward doors to hinge at the rear
 - ii. Fully welded aluminum tube frame sheeted with 0.090" (minimum) smooth aluminum.
 - iii. Door latches to include dual rotary pin locks.
 - iv. Double sealed doors ensure weather proofness to interior.
 - v. Webbing retainers ensure doors cannot open past 95 degrees. Two (2) per door.
 - vi. Integrated door status sensors are integrated into the NTC system and displayed on tablet's touchscreen when any of the body doors are ajar.
 - vii. Integrated into vehicles security system. Security system is activated for all doors with single wireless key fob.
 - viii. NFPA approved aluminum tread plate step wells with door activated LED step well lights.
 - ix. Manually retractable step system at each entry door for slip resistant entry.
 - x. Rubber coated grab handles for entry assistance – positioned on interior and exterior points to ensure safe and ergonomic entry and exit. Two (2) grab handles for each of the body entry doors.
 - xi. Integrated NFPA-approved LED ground lighting package illuminates the ground surrounding each entry door. Lights are activated through the NTC system or with an interior wall mounted switch.
- g. Compartment Doors
 - i. All aluminum construction (minimum 0.090" door skins)
 - ii. Double seal doors with automotive grade EPDM bulb-seal gaskets
 - iii. Integrated door status sensor on electronics rack door connects into security system.
 - iv. Integrated door-activated LED compartment lights
 - v. Pneumatic hold open devices on all compartment doors.
- h. Window Package
 - i. Command Body Window Configuration
 - ii. Three (3) roof top windows for aerial asset observations.
 - 1. Two (2) side 48"W x 15"H windows
 - 2. One (1) forward 38"W x 33"H window
 - 3. Four (4) 25" x 25" door mounted windows for tactical ground asset observations.
 - 4. Integrated rear view projected onto interior TV
 - 5. Total package includes 540 degree viewing capability.
 - iii. Window Specifications
 - 1. Dual pane insulated glass for superior thermal efficiency.
 - 2. 30% gray tint
 - 3. All windows to include integrated window shades.
 - a. Auto-retract with stabilizing side rails for durability
 - b. Engineered for automotive use and harsh environments
 - c. Blackout fabric
- i. Exterior Lighting Package
 - i. DOT lighting package will be LED.
 - ii. Whelen M7 series LED side mounted perimeter scene lights
 - 1. Two (2) each on curbside, streetside and rear (six (6) total lights).



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- 2. Flush mounted within chrome bezels
- j. Awning Package
 - i. One (1) automatic vertical arm awning will be installed.
 - 1. Curbside mounted to provide shade and establish a Briefing Area.
 - 2. Awning body to be color-matched to exterior of vehicle.
 - 3. Integrated into the vehicle's Interlock system
 - ii. OPTION: One (1) automatic horizontal arm awning.
 - 1. Curbside mounted to provide shade and a Briefing Area.
 - 2. Awning body to be color-matched to exterior of vehicle.
 - 3. Integrated into the vehicle's Interlock system.
- k. Emergency Light Siren / Controller
 - i. An emergency light siren and controller will be installed and integrated into NTC.
- l. Pneumatic Mast System
 - i. One (1) 26'-6" pneumatic mast with an 88 pound payload capacity will be installed on the rear exterior of the vehicle.
 - ii. Integrated into the vehicle's Interlock system
 - iii. One (1) tankless compressor system shall be provided and programmed into the NTC system to ensure full extension of mast during entire duration of deployment.
 - iv. One (1) custom bracket will be installed on the masthead for secure mounting and cable management of radio antennas, surveillance camera and/or MESH access point equipment.
 - v. One (1) 1 1/4" I.D. Nycoil cable management system will be included.
 - vi. Cables shall be pulled from electronics rack compartment to masthead. Note that additional cable quantities and types are available but may require an upgrade to the size of the Nycoil cable management system.
 - 1. Two (2) shielded Cat6 cables
 - 2. Two (2) LMR 240 coax cable
 - 3. One (1) 3-18ga security wire
 - vii. One (1) integrated Nycoil basket will be included.
 - viii. OPTION: Mast Lighting (2x LED mast lights).
 - ix. OPTION: Tereo 6061 Surveillance Camera
 - 1. Color camera with 500 meter Laser IR, 33X Optical, PTZ
 - 2. IP Controller, IP66, Mast Mount
 - 3. Installed and Configured
 - x. OPTION: Second 30' Mast
- m. Auto-Leveling System
 - i. Four-point electro-hydraulic
 - ii. Includes integrated level sensors, digital level display and manual digital controls for each leg.
 - iii. Integrated to vehicle's safety interlock system. Warning details displayed on tablet controller to inform operators of system leg status.
- n. Graphics Package Options
 - i. Nomad offers many vehicle graphics options starting with basic text all the way up to full vehicle wraps. Their in-house graphics designers coordinate with engineering's 3D models of your vehicle to permit 3D virtual reviews and approvals of the final graphics layouts prior to approval and installations. Call for pricing options.

4. COMMAND BODY - INTERIOR FEATURES

A. Walls and Ceiling



1. The body, walls and ceiling will be covered with 3/8" (minimum) exterior grade plywood covered by commercial grade FVMSS approved sound deadening interior finishing fabric.
 2. Construction shall be completed so that there is full access to all electrical wires and radio/data/AV cables within the walls with minimal effort and tooling to remove panels.
 3. Insulation
 - a. The body walls and ceiling of the vehicle will be insulated to R-7 using foil-backed rigid polyurethane sheet insulation.
 - b. Insulation will be water jet or CNC cut to ensure true zero-gap between all adjacent framing members.
 - c. All exterior walls, including entry and applicable compartment doors, and roof will be completely insulated to enhance the performance of the heating and cooling systems and prevent external noise from entering the vehicle's interior.
- B. Flooring
1. Lonseal coin style non-skid commercial grade flooring shall be adhered to 0.090" smooth aluminum, which shall be bonded to the structural subframe of the body.
 2. Lonseal will be a continuous piece from front to back.
 3. Flooring color will be Onyx flecks ("black").
- C. Interior Door Finishes
1. Finished with commercial grade FVMSS approved sound deadening interior finishing fabric.
 2. Integrated rubber coated grab handles mounted to inside faces of doors to assist entering and exiting vehicle.
 3. Integrated webbing door stays to ensure doors do not open beyond engineered limits.
 4. Integrated door sensor activates step well LED light to illuminate entry steps.
 5. Integrated door sensor connects into truck's security system and is activated and deactivated through the same wireless security key fob.
 6. Integrated locking mechanism provides remote locking and unlocking of both truck and body's door locks through same key fob.
- D. Interior Lighting
1. LED strip lighting fixtures are flush mounted within the ceiling
 - a. Constructed of extruded aluminum housings
 - b. LEDs have minimum 50,000 hours life expectancy.
 - c. LEDs are controlled through interior wall-mounted on/off and dimmable rocker switches.
 - d. White LED fixtures are positioned above the interior workspaces for daytime lighting or high-intensity nighttime lighting.
 - e. Blue LED fixtures are positioned above the interior workspaces to provide for nighttime working light.

5. MODULE COMMAND WORKSPACE

- A. Command Workstations
1. Two (2) command workstation will be integrated into the shelter's street side interior wall to accommodate two (2) users
 - a. Each location has its own dedicated 120VAC power, USB power, data, and phone ports for increased flexibility of use.
- B. Outlets and Ports
1. Workstations will include integrated ports for phone, data, A/V, and power
 - a. Two (2) Cat6 phone ports with one (1) at each workstation location.
 - b. Two (2) Cat6 data ports with one (1) at each workstation location.
 - c. Two (2) combination 120VAC 20A duplex outlets with dual USB charging ports. One (1) at each workstation location.
 - d. Two (2) 120VAC 20A duplex outlets. One (1) at each workstation location.
- C. Countertop
1. Constructed to limit while providing a solid work surface
 - a. Wilsonart HD laminate provides a durable, scratch-resistant surface



- b. Reinforced with hardwood plywood at all critical locations
- c. Black vinyl-T molding to protect edges

D. Seating

- 1. One (1) larger bench seat shall be mounted to curbside wall to provide seating for collaboration and/or observations of main workstations
- 2. Top-loading storage area shall make up entire base of seat
- 3. One (1) rolling task chair will be provided for each workstation (two total).
- 4. One (1) retaining strap will be provided to secure each chair at their location during transport
- 5. One (1) folding jumpseat will be installed on the forward wall.

6. ELECTRICAL SYSTEM (AC)

A. Generator

- 1. One (1) Onan 6KW 120V variable speed, liquid cooled Commercial Mobile Quiet Diesel (CMQD) generator with pure sine wave output will be mounted in the lower rear compartment and will be hardwired to system's automatic transfer switch.
- 2. Equipped with self-diagnostic capabilities and automatic shut down when generator systems are not within acceptable parameters (overvoltage, low oil pressure, overtemp, overspeed, and overload).
- 3. Includes the following features
 - a. 3-cylinder Kubota 722 liquid cooled diesel engine
 - b. Permanent magnet alternator
 - c. Pure sine wave output
 - d. Digital voltage regulation with no adjustments required
 - e. Bottom air inlet and outlet configuration
 - f. Integral enclosed muffler
 - g. USDA approved spark arrestor
 - h. Internal radiator
 - i. Sound insulated cover with cooling air inlet and outlet ducts
 - j. Intake silencer
 - k. Heavy-duty air cleaner
 - l. Maintenance-free electronic governor
 - m. Fused DC circuits
 - n. Automotive type starter
 - o. Electric fuel pump
 - p. Automatic timed glow plugs for quick easy start
- 4. Fuel Consumption
 - a. 0.21 gallons/hour at no load
 - b. 0.40 gallons/hour at half load
 - c. 0.70 gallons/hour at full load
- 5. A remote start panel with hour meter will be installed in the interior of the main body.

B. Shore Power

- 1. One (1) stainless steel watertight 50A 125/250V Marinco power inlet will be installed on the street side of the vehicle and will be hardwired to system's automatic transfer switch.
- 2. One (1) 25' 125/250V 50A to 50A shore power cable will be provided. Cord shall have a 50A female locking on vehicle end and 50A male straight blade on shore end.

C. Automatic Transfer Switch

- 1. Switching is intelligently controlled through the NTC system, ensuring that system will only be switched over to incoming power that is available and that is safe for system use (will not switch if source has reverse polarity, low voltage, or errant frequency).
- 2. Selects incoming power source from either the onboard generator or the shore power inlet.

D. Load Distribution Panel

- 1. (1) 50 amp 120/240VAC load distribution panel with main breaker will be installed within the interior of the main body.



2. UL listed magnetic/hydraulic branch circuit breakers. All AC circuit breakers will be appropriately sized for the power requirements of each engineered circuit.

E. System Status

1. AC power system status can quickly be seen on NTC system.

F. AC Outlets

1. 120V - 20A quad receptacles
 - a. Two (2) at integrated workstation locations
 - b. One (1) on the curbside upper wall to power the television
 - c. Two (2) within rear curbside storage area
 - d. Two (2) within the rear streetside storage area
 - e. One (1) within the electrical cabinet to power the AC-DC converter
2. 120V - 30A receptacles
 - a. One (1) twistlock outlet will be installed in the rear curbside storage area to power the UPS.
3. External Outlets
 - a. Two (2) 120V 20A GFCI duplex outlets with weatherproof covers will be installed on the exterior of the vehicle, one on curbside, one on streetside.
4. USB charging
 - a. One (1) combination 20A outlet with dual USB charging ports shall be installed to provide a location for mobile electronics charging.

7. ELECTRICAL SYSTEM (DC)

A. Load Distribution Center

1. One (1) DC power load distribution panel will be installed in the vehicle's main body behind front access panel.
2. Circuit breakers will be resettable and appropriately sized for the power requirements of each circuit.

B. System Architecture

1. 1/0 (minimum) copper stranded battery cable will be used for the 12VDC main supply lines, protected through high amp ANL and/or thermal reset breakers.
2. Appropriately sized thermal breakers and buss bars will be installed throughout to optimize cabling runs, minimizing voltage drops (resulting in better generator engine starting and improved equipment performance) and providing key service points that are easily accessible for maintenance or troubleshooting if needed.

C. System Status

1. DC power system status can quickly be seen on NTC system.

D. Master Disconnect

1. One (1) 12VDC master rotary ON/OFF disconnect switch will be installed within the vehicle's main body.

E. Batteries

1. The truck chassis provides two (2) factory starting batteries with 1460 cumulative cold cranking amps (CCA).
2. Charging will occur either by the vehicle's alternator, the auxiliary generator or by shore power.

F. Converter

1. One (1) 85-amp AC-DC converter
2. Power Factor Corrected (PFC) to ensure that the incoming power waveform of generator is not distorted, ensuring proper operations of electronics throughout vehicle.
3. Connected into the DC system to provide both the primary source of 12VDC power for the vehicle's DC-powered equipment as well as providing a charge to the batteries.
4. Charging and system status data is available over the NTC system and available to be viewed remotely.

G. DC Outlets



1. Two (2) 12V DC power outlets will be installed. One at each end of the workstations, under the countertop.

8. ELECTRICAL WIRING STANDARDS

A. Electrical Wiring

1. The vehicle will be pre-wired for AC and DC power.
2. Wiring and cables will be run through hinged chaseways running along streetside. Chase ways are covered with color-matched fabric to blend into the wall paneling and provide separation between AC and DC power cabling (streetside) and radio, voice, data, and AV cabling (curbside).
3. All electrical circuits and appliances will meet or exceed UL listing requirements and conform to applicable national electric codes, NEC and FMVSS regulations.
4. All electrical wiring, panel boxes, etc. will meet or exceed national standards.
5. Wiring will be run throughout the vehicle with access points clearly marked and engineered for ease of replacement or additions.
6. Wiring and cables have been chosen and located to limit EMI and cross talk.
7. Where wire passes through sheet metal, bulkheads and structural supports, plastic or rubber grommets will be used to protect wiring and wire looms.

B. 120VAC System

1. All electrical circuits and appliances will conform to applicable national electrical codes.
2. Main and branch circuit wiring will be stranded THHN wire.
3. All AC wiring will be color coded and uniquely numbered at all terminal ends for quick identification. Colors and numbering shall directly coincide with circuit labels within electrical schematics.
4. 120VAC wiring schematics will be provided in the owner's manual.

C. 12VDC System

1. The complete 12VDC wiring system and electrical appliances will conform to modern automotive standards throughout the installation.
2. Wiring shall be stranded GXL.
3. All DC wiring will be color coded and uniquely numbered at all terminal ends for quick identification. Colors and numbering shall directly coincide with circuit labels within electrical schematics.
4. All wiring will be bundled, tied, trimmed, and protected from chafing and abrasion.
5. All circuits will be engineered with at least a 125% factor of safety.
6. Main supply lines will be a minimum of 1/0 multi-stranded copper battery cables enclosed in a heavy duty PVC jacket.
7. 12VDC wiring schematics will be provided in the owner's manual.

9. HVAC

- A. Controls for both the roof mount HVAC and the stand-alone electric heater will both be integrated into the NTC system.
- B. The vehicle will be cooled with one (1) roof mounted 13,500 BTU low-profile air conditioner with 5,600 BTU heat strip.
 1. Condensate pump shall pump water from HVAC unit through hose to underchassis of vehicle. Hose shall be concealed within body framing.
 2. The air conditioner will ensure adequate cooling of the command body area and the electronic equipment.
 3. The roof will be reinforced to support the unit and weatherproofed so as not to allow leakage from inclement weather.
- C. One (1) 1500 watt Cadet forced air electric heater will be installed.

10. RACK INFRASTRUCTURE

A. Wiring/Cabling

1. The vehicle will be pre-wired for radio, voice, data, and audio/video.



2. Wiring and cables will be run through chaseways. Chaseways are covered with color-matched fabric to blend into the wall paneling and provide separation between AC/DC power cabling, radio, voice, data, and AV cabling.
 3. All data communication cabling and accessories will be Cat6.
- B. Electronics Data Rack
1. Two (2) commercial grade 19" by 20" deep 21U electronics rack will be installed in the rear of the vehicle with access from the interior of the command body as well as the exterior of the rear of the vehicle.
 2. Rack will be structurally fastened to the floor.
 3. A powder-coated finish will be applied to the rack for durability and scratch resistant.
 4. Vibration isolated to reduce vibration on the equipment mounted in the racks.
 5. Four (4) low-profile high damped silicone elastomer failsafe mounts are bolted to the base of each rack.
 6. Provide 3-axis protection for rack equipment.
 7. Panduit Patch Panels
 - a. One (1) Cat 6 24-port Panduit patch panel will be installed in the communications rack to route data communications.
 8. Wireminders
 - a. One (1) rack mounted Panduit Wireminder with cover will be installed to assist in cable management in the electronics data rack.
- C. Power
1. One (1) 2000VA double-conversion UPS will be included and installed.
 - a. The double-conversion UPS provides substantial improvement in equipment protection over standard UPS technologies.
 - b. UPS units have been tested to ensure full operability with generator power.
 2. Racks will contain two (2) PDU power strips
 - a. One (1) powered from AC power system
 - b. One (1) powered from UPS
 3. 12VDC power provisions within racks
 - a. 100 amps of thermally protected 12VDC power is run over a 4awg stranded cable to a 20x8-32 hot bus bar within the electronics rack compartment.
 - b. DC power is provided through the batteries.
 - c. 150-amp 20x8-32 ground bus bar is mounted adjacent to hot bus within electronics rack compartment.
 4. Communications I/O Panel
 - a. One (1) 1x2 all aluminum communications I/O panel will be fabricated from .125" (minimum) cast aluminum and installed in the rear exterior of the vehicle to provide phone and data service to facilitate the hardwired distribution of communications signals.
 - i. The I/O panel is equipped with two (2) modular faceplates.
 1. One (1) faceplate will be provided for two (2) phone 'IN' yellow ports, four (4) phone 'OUT' white ports, four (4) data blue ports and one (1) red misc. port.
 2. One (1) module will be left blank for future integration.
 3. Modules include aluminum backer plates with thumb screws for easy access to cabling.
 4. Modules include engraved cover plates to clearly identify each port. Port identifications directly correspond with respective labeled ports in electronics racks' patch panels.
 - ii. Integrated weatherproof seal at bottom of panel permits door to be closed and locked with cables remaining connected to module ports.
 - iii. Locking Southco lever latch
 - iv. Interior of panel equipped with 12V LED lighting for nighttime port identification and connections.



5. External Access Pass-Through
 - a. One (1) key locking pass-through with weatherproof cover shall be installed on the rear exterior wall to permit cables to be able to be passed through from exterior into interior and routed to electronics data racks
 - b. 2-1/4" clear opening accommodates large cable bundles and terminal plug ends.

11. Dejero Gateway

- A. Dejero 6 SIM Mobile Gateway Appliance includes the following:
 1. 3 year Cloud Blending Software, support, and warranty
 2. Two (2) FirstNet Ready Modems
 3. Multi-Cell flat panel antenna
 4. Installed and configured
 5. Customer provided SIM

12. OPTION: INTERNET SATELLITE SYSTEM

- A. One (1) 1.0m Cobham VSAT antenna will be installed on the cab-mounted radio rail assembly.
- B. Out Door Unit (ODU) equipment will include
 1. One (1) Ku Band 6W BUC
 2. One (1) Ku Band PLL LNB
- C. In Door Unit (IDU) equipment will include
 1. One (1) iDirect iQ200 series rack mounted modem
 2. One (1) antenna positioner
- D. Safety Features
 1. Antenna will be integrated to the NTC system interlock to prevent engine from starting if VSAT is deployed.
 2. Antenna deployment managed by NTC system as part of deployment sequence within Deployment Wizard. Manual backup option is also provided.

13. RADIO COMMUNICATIONS

- A. Antenna Rail (cab mounted)
 1. Custom 4" x 4" aluminum tubular antenna mounting system permits large cross-sectional area for easy expansion and access to cables.
 2. Six (6) 4" x 6" aluminum weatherproof access panels shall be mounted into the top of the rail
 - a. Sealed with custom punched automotive gaskets
 - b. Each panel is water jetted to ensure necessary tolerances for weather tight sealing and to provide true NMO-notched cutout that ensure NMO bases does not turn when tightened.
 - c. Standard NMO mount secured into each access panel. Those that are not used for antennas shall be covered with weatherproof cap.
 3. 4" x 6" aluminum access covers with automotive gaskets at each corner for ease of cable access and cable pulls.
 4. Six (6) LMR-240 cables will be terminated to six (6) different NMO mounts in this rail and then run rearward and coiled within rear electronics racks for antenna/radio integration.
 5. Includes grounding package with integrated chassis grounding lug.
- B. Antenna Rail (body mounted)
 1. Custom 4" x 4" aluminum tubular antenna mounting system permits large cross-sectional area for easy expansion and access to cables.
 2. Six (6) weatherproof access panels shall be mounted into the top of the rail
 - a. Sealed with custom punched automotive gaskets
 - b. Each panel is water jetted to ensure necessary tolerances for weather tight sealing and to provide true NMO-notched cutout that ensure NMO bases does not turn when tightened.
 - c. Standard NMO mount secured into each access panel. Those that are not used for antennas shall be covered with weatherproof cap.



3. 4" x 6" aluminum access covers with automotive gaskets at each corner for ease of cable access and cable pulls.
4. Eight (8) LMR-240 cables will be terminated to eight (8) different NMO mounts in this rail and then run rearward and coiled within rear electronics racks for antenna/radio integration.
5. Includes grounding package with integrated chassis grounding lug.
6. Pass through runs through ceiling of electronics rack compartment, providing easy access for cable runs.

14. AUDIO/VIDEO SYSTEM

A. Television Monitor

1. One (1) 26" LED television will be included and installed in vehicle.

15. SAFETY FEATURES

A. Safety Interlock

1. A comprehensive safety warning and interlock system (to prevent the truck from being able to be started) will be integrated into the NTC system to provide system status and a visible warning indicators on the tablet for the following parameters.
 - a. Leveling system status
 - b. VSAT antenna status
 - c. Awning status
 - d. Pneumatic mast status
2. Manual override switch is located within truck cab in event that there is an error in the system and the interlock functionality needs to be overridden in an emergency. Flashing indicator on switch provides coding for system that is triggering interlock to assist with any necessary troubleshooting.
3. System safety status is also viewable over any secure IP internet connection.

B. Security System

1. Connects into factory sensors of truck chassis so all factory truck doors are part of active system. Utilizes factory truck horn to signal security breach.
2. Sensors added to four (4) body entry doors as well as rear upper rack electronics compartment door to seamlessly integrate into system.
3. Entire system operated through single wireless key fob.

C. Safety Backing System

1. One (1) weatherproof reverse-activated alarm will be mounted underchassis.
2. One (1) weatherproof rear view/backup camera will be mounted near the rear roofline to permit safe backing up of vehicle as well as ability to view behind vehicle during driving.
 - a. 1/3" color Sony Super HD image sensor
 - b. Motorized (up and down) for greater flexibility and safety
 - c. IR LED for night illumination with CDS sensor for auto IR LED activation
 - d. Built-in microphone permits driver to hear exterior sounds at rear of vehicle
 - e. Image from rear view camera will be viewable on interior TV.

D. Smoke/Carbon Monoxide Detector

1. The vehicle will include one (1) combination carbon monoxide/smoke detector.

E. Fire Extinguisher

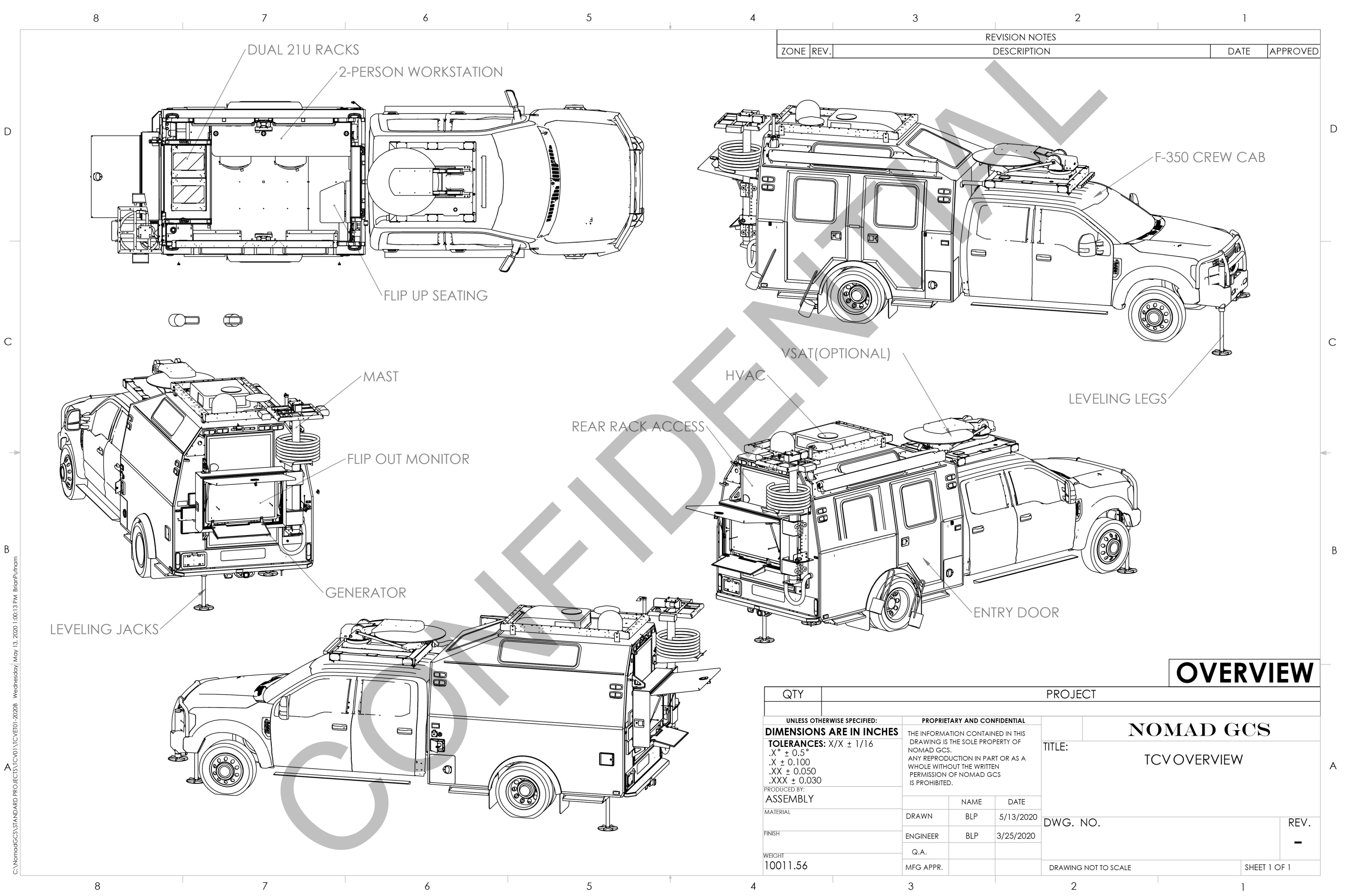
1. One (1) 1-A:10-B:C UL-listed dry chemical fire extinguisher with aluminum cylinder will be installed in the command area.
2. One (1) 1-A:10-B:C UL-listed dry chemical fire extinguisher with aluminum cylinder will be installed in the cab area of the vehicle.

F. Safety Triangles

1. Three (3) safety triangles will be provided. Includes plastic storage case.

G. Safety ID Plaque

1. One (1) safety plaque will be installed on the vehicle.
2. Safety plaque includes vehicle information such as the model number, serial number, VIN number, weights, dimensions, and generator information.



REVISION NOTES				
ZONE	REV.	DESCRIPTION		DATE
				APPROVED

OVERVIEW

QTY		PROJECT				
<div>UNLESS OTHERWISE SPECIFIED:</div> <div>DIMENSIONS ARE IN INCHES</div> <div>TOLERANCES: X/X ± 1/16</div> <div>.X° ± 0.5°</div> <div>.X ± 0.100</div> <div>.XX ± 0.050</div> <div>.XXX ± 0.030</div> <div>PRODUCED BY:</div> <div>ASSEMBLY</div> <div>MATERIAL</div> <div>FINISH</div> <div>WEIGHT</div> <div>10011.56</div>		PROPRIETARY AND CONFIDENTIAL		<div>TITLE:</div> <div>NOMAD GCS</div> <div>TCV OVERVIEW</div> <div>DWG. NO.</div> <div>REV.</div> <div>-</div>		
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		ENGINEER	BLP	3/25/2020		
		Q.A.				
		MFG APPR.			DRAWING NOT TO SCALE	SHEET 1 OF 1