

CITY OF CAPE TOWN

FIRE RAIDERS LEVEL III MOBILE INCIDENT COMMAND BUS

CAB AND CHASSIS

The Command Unit will be supplied utilizing the MAN HB2 18.240, 12,5 meter Bus Chassis with a GVM of 18 ton.

The vehicle will have a wheelbase of approximately 6000mm with an overhaul length bus body of 12500mm.

AIR HORNS

Air horns shall be recessed in the front bumper, one (1) each on the driver and officer inboard mounting positions.

ADDITIONAL AIR RESERVOIR

An additional air reservoir shall be installed and isolated to prevent depletion of the air to the air brake system and to act as a supply tank for operating air equipment.

ENGINE/PERFORMANCE

A MAN D0836 LOH 41 6 IN-LINE diesel engine with a rated net power (at sea level) of 176 kw producing 925 Nm torque @ 1200 r/min will be fitted.

HORSEPOWER

- Diesel Power – 176 Kw@2400 rpm.

TORQUE:

- Torque - 925 Nm @ 1200-1800 rpm.

ELECTRICAL

The electrical system shall be 24 volt and there shall be two heavy duty batteries with a total capacity of approximately 175AH.

The battery compartments shall be self-draining adequately ventilated and the batteries shall be readily accessible for examination, testing and maintenance via a swing-out cradle.

TRANSMISSION

The transmission shall be a VOITH DIWA 5 Automatic transmission with VOITH intarder.

SUPER AUTO EJECT 15 AMP

A KUSMAUL 15 amp Super auto-eject electrical receptacle with a RED weatherproof cover and box shall be installed on the left side of the cab above the wheel well.

It shall automatically eject the plug when the starter button is depressed.

BATTERY CONDITIONER/ PUMP PLUS

A KUSMAUL air compressor/battery conditioner shall be supplied.

STEP LIGHTS

The cab shall be equipped with sealed lights installed under the intermediate step at both access doors. The lights shall be installed on an angle to direct light onto the lower step.

VEHICLE TRACKING UNIT

An anti-theft switch shall be installed under the cab dash, in a position known only to the department.

LED DOOR AJAR LIGHT

A red LED light shall be installed in the front headliner of the cab. The light shall be wired to indicate an open door on the cab when the parking brake is released.

MAP LIGHT

A gooseneck style instrument panel map light with switch at base shall be installed on the left hand side of the dash panel.

INTERIOR TRIM AND FLOOR MAT

The cab interior soft vinyl and ABS trim shall be grey in colour.

COMMAND CENTER

BODY DESIGN (INTERIOR CONVERSION ONLY)

The Command Centre interior cabinets shall be constructed entirely of aluminium plate and extrusions. The interlocking framework, constructed from bevelled extrusions, shall be electrically seam welded both internally and externally at each joint using aluminium alloy welding wire. Each body corner rail shall be a 38mm x 38mm aluminium alloy corner section with 3mm wall thickness and shall be welded as an integral part of the body. The corner extrusions shall have a 38mm outside radius and a full length 3mm internal extruded gusset.

Interior compartment dividing walls shall be constructed with not less than 1.6 mm aluminium smooth plate. The door side frame openings shall be formed extruded channel design. Electrical wiring conduit raceway running the full length of compartments shall be provided. This raceway shall contain all wiring running to the rear of the apparatus, permitting easy accessibility to wiring.

Compartment floors shall have a "sweep-out" design with door opening threshold positioned lower than compartment floor, permitting easy cleaning of compartments.

All seams in sheet metal below frame, and around the rear wheel well area shall be welded continuous to prevent moisture from entering compartments. All other interior seams and corners shall be sealed with silicone based caulk prior to painting. Only stainless steel bolts, nuts, shall be used in mounting exterior trim, hardware and equipment.

ROOF CONSTRUCTION

The roof shall be integral with the body and shall be all welded construction. The roof shall be reinforced with 50 mm x 50 mm x aluminium tubing running the full width of the body.

AIR CONDITIONING SYSTEM

The unit shall be fitted with a minimum of two (2) CARRIER 13 500 BTU 220 VAC air conditioner units mounted on the vehicle roof externally capable of warm /cold functions. A variable speed fan shall supply a minimum of 305 cfm air flow capacity. The air conditioner will be able to operate with the vehicle in the stationary position whilst connected from 220 VAC supply. The roof mounted air conditioner shall be approximately 400 mm high x 800mm wide x 1, 2 meters long. Opening in roof shall be properly reinforced to support air conditioner and be supplied with a 25 mm rise to minimize moisture condensation under unit.

The units shall be fitted as follows:

- Conference room x 1.
- Operations room x 1.

VEHICLE LEVELING SYSTEM

A BEST levelling system shall have four (4) mounting brackets welded to the chassis frame rails, two (2) front, and two (2) rear. Each jack shall bolt to the bracket attached to chassis frame. Each jack has its own hydraulic reservoir and 24 volt DC motor wired to the chassis electrical system. Jack pads have a 500 square mm surface to prevent sinking in soft ground. Jacks shall be rated for lifting 10,000 Kilograms each minimum. The system shall have a drive-off safety feature. If the vehicle ignition switch is on and any legs are not fully retracted, a warning alarm will sound.

COMMAND CENTER ELECTRICAL SYSTEM

PROGRAMMABLE LOGIC CONTROLLER

The unit shall be equipped with Programmable Logic Controller. The PLC system shall include all components necessary for complete operation. The PLC shall be capable of controlling the following:

- All external light operations.
- All internal light operations.
- Vehicle levelling system.
- Load management and shedding.
- Full diagnostics.
- Overload protection.
- Motion detection and impact stops.
- Monitoring chassis battery voltage
- Sequencing pre-determined electrical circuits
- Monitor master switch and parking brake applications
- Provide low voltage alarm.
- Programmable control circuits.
- Remote system status indicator panel.

HMI – HUMAN MACHINE INTERFACE

The unit shall be equipped with a minimum of two (2) HMI's. The HMI shall consist of the following:

- Head-up display on full colour LCD screen.
- Full touch screen.
- Embedded data logging for easy access stored data.
- Full authority control of electrical system.

WIRING

All added electrical circuits shall be protected from over current by the PLC.

STATIC INVERTOR

One (1) true Sine wave 380 VAC 3 Phase + neutral 30 kW inverter shall be fitted in the equipment rack. The inverter will be capable of the following:

- Short circuit protection.
- Over current protection.
- Surge protection.
- Unbalanced load protection.
- Input under voltage protection.

SILENT RUNNING GENERATOR

The unit shall be equipped with a VOLT AMPERE Silent running Generator system with a minimum capacity of 10 Kilowatt at 380 volt, 3-phase + neutral, 50 cycles.

GENERATOR MOUNTING & LOCATION

The generator shall be mounted below the floor bulkhead. The generator mounting brackets shall be fabricated using heavy duty steel tubing, or structural channel. The generator mounting shall be bolted and removable so that the generator can be lowered from under apparatus for service, if necessary.

GENERATOR MONITORING PANEL

To properly monitor the generator performance and load demand during operation, the generator installation shall be equipped with a full instrument monitor panel. This unit shall be mounted next to the circuit breaker panel.

This generator output display shall be LCD readouts for the following:

- Voltmeter
- Ammeter (per line)
- Hour meter (accumulated run time)
- Frequency meter

380/240 VOLT WIRING SYSTEM

The complete wiring and electrical installation shall conform to present SABS Codes and standards.

The wiring, electrical fixtures and components shall be to the highest industry quality standards available on the market. The equipment shall be the type as designed for mobile type installations subject to vibration, moisture, and severe continuous usage.

The following electrical components and wire shall be the minimum acceptable standard for this type of apparatus:

Wiring:	All electrical wiring shall be fine stranded copper type. The wire shall be sized to load and circuit breaker rating. Wiring shall be colour coded and printed with function every 75 mm for easy identification.
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Ducting: All 380/240 volt wiring in the apparatus body shall be through flexible moisture resistant reinforced ducting, with proper seal tight connectors and hardware.

SHORE POWER RECEPTACLE

One (1) 30 ampere, 220 volt, single phase shore power receptacle shall be provided on the apparatus to provide an external power source for apparatus electrical circuits.

SHORE POWER SUPPLY REEL

One (1) HANNAY, 24 meter spring rewind reel fitted with heavy duty 5 core electrical wiring complete with heavy duty industrial type weather proof plugs shall be fitted adjacent generator pack for easy access to ground personnel.

SHORE POWER FLY LEAD

One (1) 10 meter heavy duty 5 core electrical wiring fly lead complete with heavy duty industrial type weather proof plugs shall be supplied for on-station charging

OUTLETS AND CIRCUITS

The generator shall supply the electrical equipment and outlets with wiring to circuit breaker box as outlined below. Proper circuit protection shall be installed as noted:

Two (2) 220 volt exterior outlets, one (1) each side.

The outlet(s) will be 220 volt, 15 amps.

Outlet(s) shall be protected by a 15 amp circuit breaker.

There shall be a minimum of eight (8) 220 volt outlet(s) located in the interior Command Centre space. The outlet(s) will be 220 volt, 15 amps and shall be protected by a 15 amp circuit breaker.

- Two (2) duplex outlets nearside operations room at radio cabinet location.
- Two (2) duplex outlets at radio rack area.
- Two (2) duplex outlets in galley area.
- Two (2) duplex outlets in conference room.
- Up to five (5) additional outlets may be required after review at pre-construction meeting.

MAIN DISTRIBUTION BOARD

The unit shall be fitted with a main Distribution board comprising of the following:

- Main alternator circuit isolator, electronic.
- Battery charger circuit breaker.
- Dedicated power will be supplied to each work station.
- Battery charger output fused isolator.
- Inverter input protection fuses.
- Lightning protection.
- Earth leakage protection unit.
- Circuit breaker protection for ALL outgoing circuits e.g.: plugs, radios etc.
- Main distribution will comprise of 12VDC, 24VDC, 220VAC.
- All of which shall have trip indication via HMI, audible and visual.
- Rack type PLC for future add-ons, Ethernet, analogs etc.
- To be mounted inside the command centre in equipment rack with adequate cooling and ventilation.

COMMAND CENTER BATTERY SYSTEM

The battery system shall consist of the following:

- 8 x 300 Ampere hour 12 V SONNENCHEIN Deep cycle batteries.

BATTERY COMPARTMENT

The battery bank shall be fitted in a purpose built, weather proof cradle for easy access.

BATTERY CHARGING SYSTEM

One fully automated HAWKINS 220 VAC, 12 VDC output 200 A battery charger shall be fitted.

INTERIOR LIGHTS

There shall be thirteen (12) 120 mm diameter interior dome lights with clear lenses.

COMMAND MODULE

BODY MEASUREMENTS (SUPERSTRUCTURE)

The exterior body dimensions shall be no less than:

- Length 12 meters
- Width 2.4 meters
- Height 2, 1 meters (internal ceiling).

INTERIOR SPECIFICATIONS

INTERIOR INSULATION

The body shall be insulated with a sound proof SONDOR insulation.

OPERATIONS ROOM INTERIOR

BODY MEASUREMENTS (SUPERSTRUCTURE)

The interior dimensions shall be no less than:

- Length 7 meters
- Width 2.4 meters
- Height 2, 1 meters (internal ceiling).

DIGITAL WALL

One (1) 3M digital wall integrated to a flip-top media centre shall be located against the nearside-side wall.

PLASMA SCREEN

One (1) 127 cm Interactive Plasma screens with smart board shall be provided.

TV/VCR

One (1) SONY wall mounted 56 cm –TV/VCR/DVD combination unit shall be fitted on a purpose made shelf in the off-side rear corner.

CENTER WORK STATION

The Centre floor area of the Operations room shall be provided with a centre desk top approximately 800 mm wide and 750 mm from floor to desk top. It shall accommodate the information, liaison, safety, advisor and Command officers. A central services portal shall be provided for wiring of equipment to be located on desk top.

INTERIOR PEDESTAL SEAT

Eight (8) high back vinyl pedestal type seats with fore/aft adjustment shall be provided in operations room.

CONFERENCE SUITE INTERIOR (REAR)

The rear portion of the unit shall consist of the Conference suite. The approximate size of this suite will be 3, 5 meter long 2, 4 meters wide with a minimum internal ceiling height of 2, 1 meters.

PLASMA SCREEN

One (1) 127 cm Interactive Plasma screen with smart board shall be provided against the nearside-side wall.

DIGITAL WALL

One (1) 3M digital wall integrated to flip-top media centre shall be located against the rearmost bulkhead.

TV/VCR

One (1) SONY wall mounted 56 cm –TV/VCR/DVD combination unit shall be fitted on a purpose made shelf in the off-side, section corner.

INTERIOR PEDESTAL SEATS

Eight (8) high back Executive pedestal type seat(s) with fore/aft adjustment shall be provided in Conference room. Each seat shall be mounted on a swivel style pedestal base and securely bolted to reinforced floor structure.

GALLEY SECTION INTERIOR OPTIONS (CENTER SECTION)

One (1) MINUS 40, 12/220 volt refrigerator/freezer(s)

COFFEE MAKER

A coffee brewer shall be provided in galley above sink area.

WATER COOLER

A water cooler shall be provided in galley area.

MICROWAVE OVEN

A SHARP CAROUSELLE microwave oven shall be provided in galley above sink area.

INTERIOR SINK

One (1) stainless steel sink and water system, Sinks shall have chrome plated faucet and individual control valves for hot and cold water. Sink shall be countertop recessed into custom built cabinetry.

WATER HEATER

There shall be one (1) KWIKOT, 220 volt electric "On-Demand" water heater installed to supply heated water to the interior water system. The heater shall be a 3,000 watt, 25 amp, and tank less water heater.

SIDE ENTRY DOORS

Access to the interior body Command compartment shall be provided through two (2) side entry doors. Construction of the side entry doors shall be bus style low entry doors with automated pneumatically operated two leaf in-swing type doors. Door location shall be one (1) at driver's station and one (1) at Conference room.

COMMAND AREA TECHNICAL EQUIPMENT

The following equipment shall be included to enhance Command and Communications operations;

COMMAND CAMERA SYSTEM (Optional)

A surveillance camera system shall be mounted on top of the specified elevated mast as follows;

- One (1) Camera system complete with day/night operation.
- One (1) Full function keyboard with joy stick controller.
- One (1) High density time lapse video recorder.

The system shall be designed to allow the surveillance camera to any height up to approx. 3, 4 meters Above the apparatus body.

The camera shall supply a picture to each of the supplied Plasma screens.

1. One (1) 2.4GHz 10km Video/Audio Transmitter with the following capability shall be fitted:

- Distance: $\pm 200\text{m}$ (enclosed space); $\pm 10\text{km}$ (outdoors, line-of-sight)
- GHz Transmission Frequencies (2413, 2432, 2451, 2470)
- 3W Output Power
- Video Input: 1V p-p 75ohm input
- Audio Input: 2 V p-p Max
- 4 Selectable Channel Frequencies
- Compact Size: 120x55x38mm
- Connector: SMA connector
- Power Consumption: 12VDC @ 800mA
- Weight: 200g

2. One (1) Day/Night Wide Dynamic Camera with 26x Zoom Lens with the following capability shall be fitted:

- Zoom Ratio: 260x (26x optical; 10x digital)

- Optical Zoom Lens: 3.5 ~ 91 mm (F1.6)
- Zoom Speed: 4 sec
- Sensor: 19mm Interline Transfer Super HAD CCD
- Shutter Speed: Auto/Manual (8 Steps 1/60~1/10,000 sec)
- Resolution: 480 TVL
- Min Illumination: 0.01 Lux (Slow Shutter); 0.1 Lux (Mono Day/Night); 1 lux (Colour)
- S/N Ratio: 48dB
- Backlight Compensation: Automatic (on/off selectable)
- White Balance: Automatic (on/off selectable)
- Wide Dynamic Range: Auto/On/Off
- Dimensions (mm): 50 x 61 x 92
- Power: 9~15VDC (12VDC Recommended) @ 360mA

High resolution day/night camera with integrated optical zoom lens. It features a 260x zoom (26x optical; 10x digital) with auto iris and auto focus.

For low light applications the camera shall have two modes: a day/night mode when the camera switches from colour to b/w below 1 lux and a slow shutter mode which slows the camera's exposure time to allow colour images in lower lighting conditions. Other features shall include backlight compensation, automatic gain control and DSP enhanced circuitry. This camera shall be ideal for housing with minimum space as well as applications which require a fixed camera with greater than 50mm focal length.

3. One (1) High Speed Dome and PTZ Camera Controller with the following capability shall be fitted:

- Control up to 255 speed domes/PTZ Drivers
- RS485 Communication (2400/4800/9600bps)
- Pan/Tilt/Focus/Zoom/Preset Control
- Auto scan & auto cruise control
- Back-lit display for menu setup
- 9-12VDC @ 5W Operating Power
- 3-Axis Joystick with built-in zoom
- Dimensions: 360 x 160 x 45 mm

The controller shall be designed to control the high speed dome cameras. It shall also be used to communicate with the PTZ driver for control of PTZ cameras. This ergonomically designed controller shall feature an easy to use keypad & 2 or 3 axis joystick. Setup shall be easy via a menu on the LCD display.

4. One (1) Plastic Polymer Housing for CS Mount Camera shall be provided and consist of the following:

- External Dimensions: 163 (W) x 150 (H) x 290 (L)mm
- Internal Dimensions: 68 (W) x 68 (H) x 190 (L) mm
- Weatherproof Rating: IP65 (6 = Dust Tight, 5 = Protected against water from all directions)

The housing shall be constructed of rugged composite polymer plastic. Featuring O-ring seals, this housing is IP65 weatherproof shall be ideal for most environments. It shall feature a sunshield and large Lexan viewing window. The front shall be able to unscrew for cleaning if needed.

5. One (1) Day/Night Mobile Vehicle PTZ Camera & Display Controller with the following capability shall be fitted:

- Rugged All Weather PTZ Day/Night Camera
- CCD Camera
- Zoom: 25x Optical, 12x Digital
- Resolution: 470 TVL
- Light Sensitivity: 3.0 lux (Colour) 0.02 lux (NIR filter mode)
- Near-Infra-Red Filter - on/off switchable.
- Auto Focus, Time/Date Stamp
- Pan/Tilt Angle: 0° to 440° / 0° to 240°
- Pan/Tilt Speed: 0 to 72°sec / 0 to 28°sec
- Video Monitor with 142mm TFT LCD & Joystick Controller
- Operating Temp: -20 to 70deg° (Camera) 0 to 50deg° (Controller)
- Operating Vibration: 3g's, 3 axis, 5 to 1 KHz (Camera)
- Weight: 4.5kg (camera)
- Dimensions: 180mm (diam) x 200mm (height)
- Power: 11.5 to 18 vdc (500mA, 2.0A Peak)
- Options: NIR illuminator, wiper, nitrogen pressurised camera housing
- Optional NIR illuminator: 50W Halogen, 4 degree spot, 50Mtr Range (760nm)

The camera shall be ruggedized with pan and tilt zoom system for all-weather-use. It shall be ideal for Police Operations, Covert Surveillance or Intelligence/Military use. This Day/Night video system shall enhance the user's vision of the outside world and shall be able to operate on fixed or mobile platform.

The features shall include inertial stabilization for mobile use, a quick disconnect mounting system, for roof racks and a near-infra-red filter for day/night operation modes. The image stabilization feature shall ensure a clear and vibration free video picture.

The camera housing shall be constructed of aluminium, stainless steel, rubber, and glass, and be virtually indestructible. For low light operation, the camera shall be supplied with a high-intensity halogen NIR beam lamp which shall work in conjunction with the NIR camera filter.

There shall be a hand operated display-controller in-side the vehicle. This controller shall feature a 142mm TFT LCD video monitor with ptz camera joystick & controls for zoom & focus. A single cable connection shall connect the camera and display/control unit making for easy installation.

TELESCOPING PNEUMATIC MAST

The apparatus shall be equipped with One (1) heavy duty WILL BURT 8, 9 pneumatic powered telescoping mast. The mast shall utilize air from its own built –in compressor system and will not rely on the chassis air supply. A red flashing warning light will be visible to the driver to warn when a light tower is out of roof nested position. A pneumatic kit to raise and lower the mast shall include air control valve, air gauge, and regulator.

The mast shall be of a free standing design (non-guyed) and use high strength, heat treated aluminium alloy tubes and collars. Each mast section (tube) shall have two full length external keys with matching keyways to maintain directional azimuth.

Each mast section and collar shall be of the low friction synthetic bearings for smooth operation and longer life. Bumpers shall be supplied to reduce shock on extension and retraction. All exterior aluminium surfaces shall be anodized and sealed. Fasteners and fittings shall be plated steel or stainless steel for corrosion resistance.

Mast shall be mounted using an internal roof mounting kit. Wiring schematic, air piping schematic and installation diagrams shall be provided with the manual.

Mast will be provided with two (2) coil conduits, needed to accommodate four (4) coax cables, one (1) for camera and three (3) for radio antenna mounts.

NYCOIL WIRING

Nycoil conduit shall be provided for the telescopic mast.

A mast bucket shall be provided to hold the Nycoil below the roof line of the truck. The bucket shall be fabricated from smooth aluminium with welded water tight seams. The bucket shall have a lip around the top of bucket to secure and seal the bucket to the roof. The bucket shall have an aluminium drain tube welded into the bottom of the bucket to allow water hose to be attached to drain water to the ground.

PUBLIC ADDRESS SYSTEM

A SOUND COMMANDER SC1000 public address (PA) amplifier shall be provided and installed in Technical cabinet. Amplifier will be wired to Three (3) roof top speakers for use with the amplifier. An evacuation enunciator shall also be provided with system. Access to the PA system shall be provided from the exterior phone handset.

CLOCKS WITH TEMPERATURE

Two (2) Clocks with outside temperature sensor shall be provided and located in the Conference Area, Operations Area. All clocks shall be wired together and sync for time with a GPS sync module.

ONBOARD COMPUTERS

Six (6) Dell OptiPlex™ 745 Ultra Small Form Factor:

- Operating system Genuine Windows XP Professional, SP2 with Media
- Processor Intel® Core™ 2 Duo Processor E6400 (2.13GHz, 1066MHz FSB, 2MB L2 cache), VT, EIST
- Support Service 3 Years Onsite Service with Next Business Day Response (incl. e-Learning Pack)
- Business Support 3 Year business support (incl. e-Learning Pack)
- Monitors Dell 17" Ultra Sharp Black (TCO99) Flat Panel Monitor (1707FP) - Dell Recommended Feature
- Memory 1.0GB 667MHz Non-ECC DDR2 SDRAM (2*512MB DIMM) Memory (Dell Recommended Feature)
- Hard Drive 80GB (7,200 rpm) SATA 3.0Gb/s Hard Drive (-ZAR - R110)
- CD ROM & Read-Write Optical Drives 8 xs DVD+/-RW Drive2 with double layer write capability
- Keyboard Enhanced Quietkey™ USB Space saver Black keyboard - Language (English layout)
- Mouse Dell 5 Button USB Premium Optical Mouse
- Antivirus Software McAfee Security Center v7 - - 90 day trial version

RADIO PACKAGE

- Eight (8) MTM 800 Mobiles with Telephone set and head sets.
- Two (2) Dual heads for two locations
- Twelve (12) MTH 800 Portables
- Three (3) 6 charging slot bays
- One (1) Icom A110 Aviation Radio
- Three (3) Yaesu VX 8300 Aviation Portables

CELLULAR TELECOMMUNICATIONS

4 x Nokia 6110 handsets
1 x LAN-Cell™ Model GPRS-401 (GSM/GPRS)

Hardware Specifications:

Physical

- Dimensions: 10.75 in (W) x 7.5 in (D) x 1.625 in (H) (273 x 190 x 41.3 mm)
- Weight: 2.9 lbs (1.3 kg)
- Table-top or Wall-Mountable

Power

- 12V DC (1200ma max) (solar cell compatible)
- 2.1 mm jack (positive center pin)
- Power consumption: 6W (typical), 14W (max)

Environmental

- Operating Temperature: -22 - 140 F (-30- 60 C)
- Operating Humidity: 0% to 92% (non-condensing)

I/O Connections

- 4 x 10/100 Mbps Ethernet LAN switch ports (auto-sense/auto-negotiate)
- 1 x 10/100 Mbps Ethernet WAN port (auto-negotiate)
- 1 x DB9 serial configuration port
- 1 x SMA female antenna connector (antenna supplied)

GSM/GPRS Specifications

- Quad Band GSM Cellular (GSM850, EGSM900, DCS1800 and PCS1900)
- Multi-slot GPRS Class 12 (4RX/4TX, max 5 slots)
- GPRS Release 97 and 99 (SMG 31)
- Coding Schemes CS1-CS4
- Packet Channel PBCCH/PCCCH
- Sensitivity: less than -108 dBm (typical GPRS CS1)
- Transmit power: Class 4 (2W) @ GSM 850/900; Class 1 (1W) @ GSM 1800/1900
- Antenna Connector - SMA Female

Software Specifications:

Virtual Private Networks

- ICSA certified IPSec-compliant VPN
- 2 simultaneous VPN connections (IPSec)
- DES, 3DES, AES encryption
- Local User Database or RADIUS server for Extended Authentication
- LAN-Cell initiated or IPSec client pass-through VPN support
- NAT Traversal & Keep-Alive packet support
- Interoperable with standard IPSec-based VPN products (e.g. Cisco, ZyXEL, Sonic Wall, WatchGuard, NetScreen, etc.)

Firewall

- ICSA certified Firewall
- Packet Filter
- Stateful Packet Inspection

- Denial of Service
- Attack Alerts & Log
- Access Control of Service

IP & Routing

- DHCP client & server
- Multi-NAT/SUA/Port Forwarding
- IP Routing: UDP, TCP, ICMP, ARP, RIP V1 and RIP V2
- IP Multicast
- Programmable static routes
- IP Alias (3 VLANs)
- Dynamic DNS support

Content Filtering & Security

- Java/ActiveX/Cookie/Proxy Blocking
- URL Blocking
- Digital Certificates (X.509, PKCS#7)
- Local & Remote Certificate Authority support

Device Management

- Web-based configuration utility (HTTP or HTTPS)
- Terminal-based configuration utility (Telnet or SSH)
- FTP/TFTP for firmware upgrade & configuration backup/restore
- SNMP support
- Command line interface for scripting and advanced configuration
- Remote management from LAN & WAN
- User selectable IP port assignments for each management utility
- Detailed event logging & packet tracing with Syslog and E-Mail log/alert support

Cellular/WAN Access Control

- Auto-failover routing between wired and cellular interfaces (user selectable routing priority)
- Primary & backup cellular access methods (e.g. GPRS & Circuit Switched Data)
- Time, Day and MAC address restrictions
- Traffic redirect to an external device for high-availability applications

Included Accessories

- Quad Band GSM/GPRS magnetic mount indoor/outdoor antenna w/ 2m coax lead & SMA male connector
- 120VAC to 12VDC US wall-mount power adapter (other power supplies available for a nominal charge)
- Serial Cable (DB9/DB25) for configuration programming
- Cat-5 LAN patch cable
- Quick Start Guide
- CD including User's Guide & related documentation

GLOBAL POSITIONING SYSTEM

- One (1) Garmin 276C GPS
- 3.8-inch diagonal, 480 x 320 pixel, 256-color TFT screen with adjustable LED backlight
- Unit dimensions: 5.7"W x 3.2"H x 1.9"D
- Adjustable marine mounting bracket
- Stores up to 3,000 user waypoints, 50 reversible routes (300 waypoints per route)
- 10,000-point automatic track log; 15 saved tracks
- Rechargeable lithium battery offering 5-15 hours of use (depending on backlight settings)
- WAAS-enabled, 12 parallel channel GPS receiver
- Adjustable quad helix receiving antenna with remote antenna capability
- Built-in base map with automatic routing and turn-by-turn directions
- Accepts standard Garmin data cards and pre-programmed data cards
- Provides separate serial and USB interfaces
- 2 NMEA serial ports
- Offers Blue Chart night mode for easier viewing at nighttime
- Large numbers option for easy viewing
- Position formats include Lat/Lon, UTM, Loran TDs, Maidenhead, MGRS, User, and more
- Provides a course deviation indicator when navigating
- Project your position on the map with the configurable complex heading line
- Built-in tide tables and celestial tables for sun and moon calculations
- Alarms: anchor drag, arrival, off-course, proximity waypoint, and clock
- Water resistant to IEC 60529 IPX7 standards (submersible in one meter of water for 30 minutes)
- Unlocked City Navigator CD
- 128 MB data card
- 12-volt adapter with speaker
- Friction mount
- Automotive mount

WEATHER STATION

Roof mounted DAVIS WEATHER MONITOR II station shall be provided with a pivoting mount that allows station to be stored horizontally on roof in a protective enclosure. Retention shall secure station in stored position and also provide protection from damage to station components.

Full enclosure with hinged lid shall be provided around station and roof top plug.

The weather station shall indicate wind speed, wind direction, interior and exterior temperature and barometric pressure.

Furnished with the weather station will be the following:

- One (1) External, removable, 2-piece tubular mast with truck mount brackets.
- One (1) Interface/data formatter to link weather station to a computer.
- One (1) Weather software package for Windows.

The mounting brackets for the weather vane will be mounted on the top of body adjacent to roof hatch.

SATELLITE TV SERVICE

The satellite system used for the internet service shall also provide the television service. The system shall be connected to the all the plasma screens, each with separate tuner/receiver controls.

- Can be used with: Astra 2, Astra 1, Hotbird & Sirius
- Single co-ax connection to control box
- Rugged, ABS plastic dome
- Control box connects to any satellite receiver
- Dimensions: Dome: 70cm diameter x 40cm high

- Dimensions: Control box: 30cm W x 18cm D x 5cm H
- Weight: approx. 13Kg "
- Colour: White but it can be painted in any colour with a non-metallic paint.
- Operates on 12V & 24V
- Uses approx. 1.8A on 12V in search mode, 1A in stand-by mode
- 2-year warranty

CLOSED CIRCUIT TV FEED

A DVR recorder shall be provided and installed in the data rack located in the Technical Cabinet and wired to the surveillance camera system. The DVR unit shall be wired with composite or s-video to the plasma/ TV locations.

One (1) E-DARLEX-20

- **Video Inputs** 20 Composite Video 1 V p-p 75 ohm (model dependant)
- **Video Outputs** 3 (1 x Main Monitor, 2 x Spot Monitors)
- **Looping Outputs** Yes
- **Multi-Screen Views** On Main Monitor and Spot Monitor #1
- **Max. Horiz. Resolution** 500 TVL
- **Recording Speed** Total 50 images/sec
- **Recording File Size** **(Highest Quality 500 TVL)** 39K (approx 160 GB/day needed)
- **Recording File Size** **(High Quality 460 TVL)** 32K (approx 130 GB/day needed)
- **Storage Space** 5 x 3.5" (Fixed HDD), 2 x 5.25" (DVD & Removable HDD Bay)
- **HDD Supported** 300, 400, 500 GB IDE & All SCSI
- **External Storage** Via SCSI interface
- **Motion Detection** Configurable Camera-by-Camera
- **Triplex Operation** Record, Playback & Network
- **Network** Via TCP/IP (client software included)
- **Multiple Keyboard Support** Up to 2
- **Alarm Inputs** 20
- **Relay Outputs** 2
- **Power** 220~240 VAC
- **Weight** 18 Kg
- **Dimensions (mm)** 443 x 110 x 430 (19" rack mount)

One (1) Creston Multimedia Centre will be incorporated to route information to the Plasma screens as well as the LCD Screens.

SATELLITE SYSTEM

The system shall provide broadband internet connections from the vehicle while on scene. The apparatus computer network shall be wired to this equipment so that the internet access is shared by the network. The speed of the connection (bandwidth) will be determined by the plan that is purchased by the Department after the unit is delivered.

The broadband internet connection shall be provided by the installation of a Satellite Systems satellite.

Satellite Features:

The transportable system shall be an automatic scanner polarizer and beam positioner system for a foldable two-way satellite antenna.

It shall be designed to automatically find and acquire the satellite beam and the satellite position based on the GPS position reading and other positioning parameters.

It shall be aimed for the nomad user who wants to have high speed Internet access in remote locations where landline and ISDN do not exist.

This system shall allow mobile users with the capability to stop anywhere, under the satellite coverage, and to access Internet over satellite in both directions while maintaining satellite TV signal reception.

The transportable dish shall offer additional capabilities such as:

- Satellite acquisition and lock within 3 minutes or less
- Satellite independent: works with any configured satellite
- Dish pointing is automatic and is fully software controlled
- Optimized signal reception and transmission
- Automatic signal cross polarization.
- Fast reacquisition based on last good position
- System authentication with the service provider
- System monitoring based on GPS location
- Antenna folds automatically upon vehicle movement.

AVL Mobile KU band

Reflector	96 cm - Channel Master	
Optics	Offset, Prime Focus	
Drive System	Patented Roto-Lok®	
Mount Geometry	Elevation over Azimuth	
Polarization Adjustment	Rotation of Reflector/Feed about Boresight	
Controller	TracStar One-button Auto-acquisition	

Electrical RF	Receive	Transmit
Frequency	10.70 - 12.75 Ghz	13.75 - 14.5 Ghz
Gain (Midband)	39.7 dBi	41.2 dBi
VSWR	1.30:1	1.30:1
Beamwidth on Orbital Arc (degrees)		
3 dB	1.8	1.5
10 dB	3.2	2.8
First Sidelobe Level (Typical)	23 dB	23 dB
Radiation Pattern Compliance	FCC §25.209, ITU-R S.528.5	
Antenna Noise Temperature	32° K at 30° Elevation	
Polarization	Linear Orthogonal	
Allowable Power	14dBw/4kHz per FCC, 0dBw/4kHz per ITU	
Cross-Pol Isolation		
On-Axis (minimum)	30 dB	35 dB
Off-Axis (within 1 dB BW)	28 dB	30 dB
Feed Port Isolation - TX to RX 70 dB		
Satellite system Compliance	Intelsat, PanAmSat etc.	

Controller

Type	Fully Automatic Satellite Acquisition, Peaking and Cross-Pol Adjustment using GPS, Compass, and Level Sensor Inputs with Entry of Desired Satellite, Certified for Auto-Commissioning on select services	
Positioning Accuracy	< ± 0.1 degree	
Size	Standard Two Cases	6 x 6 x 3.5 in (15 x 15 x 9 cm)
	Optional Rack Mounted Config.	1 RU Chassis 8 in (20 cm) deep, Weight 3.75 lbs. (1.7 kg)

Input Power 110/240 VAC, 1 ph, 50/60 Hz, 5 amps peak, 1 amp cont.

- Creates mobile DSL/T1 line for 2-way, real-time transmission of video, voice, IP and data via satellite
- Maximum uplink wattage of 25 watts, targeted especially for video conferencing, tele-medicine, business-to-business, and emergency communications
- Motorized antenna equipped with controller to automatically find satellite
- Lightweight design and platform can be adapted to mount on almost any vehicle, as small as an SUV or mini-van
- Cost-effective, priced to be an affordable alternative to T1 installation
- Available with linear actuator or dependable Roto-Lok drive system
- Auto-stow allows transport on vehicle - no need to pack and unpack

LOCAL AREA NETWORK

One (1) Miconet SP624 EtherFast 10/100M Smart Switch shall be installed in the Technical Equipment Cabinet.

Compliant with IEEE802.3 10Base-T, IEEE802.3u 100Base-TX, IEEE802.1p traffic prioritization and IEEE802.3x flow control standards

- Support auto uplink in all RJ-45 ports
- Support auto-negotiation to automatically select link operation mode of speed/duplex in all RJ-45 ports
- Support 6 groups of trunk and up to 4 ports one trunk
- Support 24 groups of port-based VLAN
- Support port-based, tag-based priority, TOS and bandwidth shaping of ports to achieve QoS
- Provide console and web-based user interface for configuration
- Provide Auto Discovery for centralized management
- 8K MAC address entries
- 320K Bytes memory buffer
- Forward and filter packets at non-blocking, full wire speed
- Support port-based, tag-based priority, TOS and bandwidth shaping of ports to achieve QoS
- 100 ~ 240V AC, universal internal power supply

A local area network switch shall be installed in the Technical Equipment Cabinet.

PRINTER/FAX

One (1) HEWLETT PACKARD Laser Jet 3380 mfp printer/copier/scanner with network port shall be provided and mobile mounted to work area specified.

ELECTRICAL JUNCTION BOX

There shall be one (1) junction box with snap shut outlet covers and backlit face plate. Junction box shall be equipped with a 25 mm pig tail with twist lock male plug for connecting to cable reel.

A bracket shall be installed on compartment wall to store junction box when not being used.

The electrical junction box shall have a cast aluminium finish.

The outlet(s) will be three (3) 220 volt, 20 amp twist lock style weather proofed outlets.

SIDE RECESSED FLOODLIGHTS

Eight (8) MAGNAFIRE 3000, 1000 watt 220 volt quartz floodlights with recess body mounts shall be provided, four (4) on each side of the Command Centre body in the upper portion.

These lights shall be wired directly to the electrical generator system with conduit and stranded copper wire.

The floodlights shall be protected with circuit breakers rated at the proper amperage and wire size.

There shall be one (1) switch to control the scene lights. The switch shall be located in the operations room.

COMMAND LIGHT TOWER WITH BACK LIGHT OPTION

The apparatus shall be equipped with one (1) NIGHTSCAN POWERLITE NS10-9000 all-electric flood light tower.

The unit shall not require tapping into vehicle braking system to be operated, eliminating the chance for vehicle brake problems.

The light bank shall have six (6) weatherproof, 1,500 watt, 240 volt quartz halogen lights.

Light heads shall be mounted in three (3) pairs, giving two (2) vertical lines of three (3) when the lights are in the upright position. The lower pair of light heads shall be capable of being rotated about a horizontal axis to provide light to the opposite side of the apparatus.

Power for light bank shall be transmitted through power collecting rings thus allowing 360+ degrees rotation in either direction.

The light tower shall be capable of overhanging the side or back of the vehicle (depending on mounting location) to provide maximum illumination and a warming area adjacent to the vehicle. Positioning of the light bank shall be accomplished with maintenance free, heavy duty 12 volt linear actuators.

The Command Light assembly shall be all aluminium construction, with stainless steel shafts and bronze bushings for long life and low maintenance.

Light tower shall be controlled with a hand-held umbilical line remote control. Command Light to be equipped with "Auto-Park" automatic nesting feature.

Command Light controls shall feature:

- Three (3) switches, one (1) for each light bank
- One (1) light bank rotation switch
- One (1) switch for elevating lower stage
- One (1) switch for elevating upper stage
- One (1) light to indicate when light bank is out of roof nest position
- One (1) light to indicate when light bank is rotated to proper nest position
- One (1) back light rotation switch

The light tower shall have a full extension of 3 meters from mounted position and shall extend from nested position to full upright in less than 20 seconds.

A flashing warning light shall be provided in cab/command centre, indicating when a light tower is not in nested position. The operational envelope of the mast shall be automatically illuminated whenever the mast assembly is being raised, lowered, or rotated.

The Command Light shall be covered by a one (1) year limited warranty from defects in materials and workmanship. An operation, maintenance, and parts manual shall be provided with the delivered apparatus.

The floodlight tower shall have a strobe indicator located on the top of the upper section.

The strobe light shall have a green cover.

GENERAL LIGHTS PACKAGE

TAIL LIGHTS

Rear body tail lights shall be vertically mounted per Road Traffic Ordinance. The following lights shall be furnished:

- Two (2) TRUCKLITE amber LED turn signal lights
- Two (2) TRUCKLITE red LED stop/tail lights.
- Two (2) halogen back-up lights with clear lens.

MIDSHIP MARKER/TURN SIGNAL

Two (2) TRUCKLITE LED midship body turn signal lights shall be installed. There shall be one (1) light on each side of the body, in the wheel well, ahead of the rear axle. Both lights shall have an amber lens and operate with chassis turn signals.

MARKER LIGHTS

The apparatus body shall be equipped with all necessary clearance lights and reflectors in accordance with Road Traffic Ordinance. All body clearance lights shall be LED to reduce the need for maintenance and lower the amp draw. Clearance lights shall be wired to the headlight circuit of chassis.

STEP LIGHTS / GROUND LIGHTS

There shall be four (4) clear lens door/step area scene lights provided on the Command Centre. Lights shall be placed at each entry/exit door and step where personnel climb on or descend from apparatus to ground level. All of the ground lights shall be activated when the parking brake is set and be alternatively controlled via the HMI.

LICENSE PLATE LIGHT

One (1) plated license plate light shall be installed on the lower left rear corner of trailer body. License plate light shall be wired to the headlight circuit of chassis.

ELECTRONIC SIREN

One (1) FEDERAL SIGNAL Electronic siren with standard hard wired microphone and electronic air horns shall be provided in cab. Siren to be installed as close to 24 volt control panel as possible. The siren shall be de-activated when park brakes are set.

SIDE SCENE LIGHTS

Eight (8) MAGNAFIRE 3000 Scene lights shall be provided, four (4) each side of upper body. Two (2) switches shall be provided, one (1) for the left side scene lights, and one (1) for the right side scene lights.

REAR SCENE LIGHTS

Two (2) MAGNAFIRE 3000 scene lights shall be provided on upper rear body. One (1) switch shall be provided for rear scene lights.

WARNING LIGHT PACKAGE

UPPER WARNING LIGHT SYSTEM

FRONT UPPER WARNING LIGHT

One (1) FEDERAL SIGNAL light bar, all red lenses, with (2) forward facing clear lamps, permanently mounted to roof. Light bar shall be separately switched at the 24 volt rocker control panel.

SIDE UPPER WARNING LIGHTS

Two (2) FEDERAL SIGNAL lights with red lens shall be provided, one (1) each side of the apparatus in the upper rearward corners. The strobe lights shall be controlled by a strobe power supply. The lights shall be switched at 24 volt control panel in cab.

SIDE UPPER WARNING LIGHTS - LOAD MANAGED

Four (4) FEDERAL SIGNAL lights with red lens shall be provided, one (1) each side of the Command Centre body in the upper forward corners. The strobe lights shall be controlled by a strobe power supply. The lights shall be switched at 24 volt control panel in cab. These lights shall be load managed.

REAR UPPER WARNING LIGHTS

Four (4) FEDERAL SIGNAL lights with red lens shall be provided in upper rear body corners. The strobe lights shall be controlled by a strobe power supply. The lights shall be switched at 24 volt control panel in cab.

LOWER WARNING LIGHT SYSTEM

FRONT LOWER WARNING LIGHTS

Four (4) FEDERAL SIGNAL Strobe lights shall be installed on the cab fascia above the headlamps, two (2) red lenses and two (2) clear lenses.

SIDE LOWER WARNING LIGHTS

Four (4) FEDERAL SIGNAL lights with red lens shall be provided, two (2) each side of lower apparatus, one each side above rear wheel wells and one each side at Rear bumper ends.

The strobe lights shall be controlled by a strobe power supply. The lights shall be switched at 24 volt control rocker panel in cab.

REAR LOWER WARNING LIGHTS

Two (2) FEDERAL SIGNAL lights with red lens shall be provided on the rear of lower body area. The strobe lights shall be controlled by a strobe power supply. The lights shall be switched at 24 volt control rocker panel in cab.

EXTERIOR COMPARTMENTS

The exterior compartment doors shall be custom manufactured and built for each compartment. These doors must be able to withstand years of rugged service and wear. The doors shall be flush mounted so that the outer surface is in line with the side body surface. The exterior panel shall be of 3 mm thickness smooth plate aluminium and the interior panel shall be of 1, 6 mm thickness smooth plate aluminium. Door shall have drain hole openings for drainage and ventilation.

Compartment door openings shall be sealed with closed cell automotive type rubber moulding to provide a weather resistant seal around door. In addition rubber moulding shall be provided along hinge to prevent moisture entry.

Compartment doors shall have full height stainless steel hinge, with stainless steel pin. The hinges shall be bolted to the door and body with stainless steel machine screws. A polyester barrier film gasket shall be placed between stainless steel hinge and any dissimilar metals as necessary.

Drip rails shall be installed above all compartment door openings. Drip rails shall be fastened with stainless steel screws. These drip rails shall be completely removable for easy replacement if necessary.

A gasket shall be placed between stainless steel handle and door. All compartment doors shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.

COMPARTMENT LIGHTS

The compartment lights shall be automatically activated when the compartment door is opened.

EXTERIOR COMPARTMENT DIMENSIONS

The approximate compartment door openings shall be 1130 mm wide x 690 mm high and 730 mm deep. Compartments shall have vertically hinged box pan style doors. The inner 1, 6 mm aluminium panel shall be unpainted.

A gasket shall be placed between stainless steel handle and door. The hinged doors shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.

WATER SUPPLY TANK

There shall be one (1) 200 litre plastic fresh water holding tank located below floor bulkhead. A fresh water fill shall be provided at the exterior apparatus body with household hose type connection. A 12 volt self priming, flow controlled water pump (minimum of 12 lpm with built-in check valve shall be provided and plumbed to water system.

WATER RETENTION TANK

There shall be one (1) 200 litre plastic holding tank located below Command centre body. There shall be a mobile home type waste water drain system installed using flexible tube. There shall be a valve located below the apparatus body to drain the retention tank.

ROOF ACCESS LADDER

Ladder shall be constructed with vertical aluminium extrusion tubing and aluminium grip surface ladder rungs with slip

Resistant tread grip pattern. Ladder shall be set off from body 203mm. Ladder shall be of all welded construction and mounted to

Body with chrome plated end stanchions bolted to body with stainless steel bolts. The ladder shall NOT extend above the

Body roof. Ladder shall be installed on rear curbside of apparatus body.

ROOF ACCESS HANDRAIL

There shall be two (2) handrails mounted on top of Command Centre to assist in roof access. Handrails shall be stainless steel tubing with chrome plated end stanchions and be able to a fully stowed position during road travel.

ELECTRIC STEP

There shall be one (1) KWIKEE heavy duty, 12 volt, electric folding step furnished and installed under each exit/entry point on the apparatus. The step shall be located, one (1) under each entry/exit door. Each

step shall be minimum 600 mm wide and shall fold up under the body to improve ground clearance during travel. Upon activation, the step shall drop out and down using electric actuators. The distance from the ground to the first step shall be no more than 200 mm. The top surface of each step shall be covered with nonskid aluminium tread plate.

ROLL-OUT AWNING

Two (2) CAREFREE heavy duty canopy awnings shall be installed on the nearside/off-side of the apparatus body. The awnings shall be 6 meters in length respectively and be attached to the Command Centre Superstructure. The awning shall be manufactured with satin finish extruded aluminium arms and braces. The arm channels shall utilize nylon bearings for a smooth operation. Awning shall lock while in stored position to prevent any rattling during travel.

Awning will lock and unlock with a remote brake control located on awning arm, not requiring the use of a wand.

Features of the awning are:

- Built-in 12 volt amber fluorescent light.
- Awning hangers.
- Built-in awning tie downs to hold awning steady in a breeze.
- Durable multi-layer laminated vinyl fabric that resists scratches, stains, fading and mildew.
- Metal wrap cover.