VIRGINIA BEACH EMS DEPARTMENT

TECHNICAL ASSET SYSTEM INTEGRATION REQUIREMENTS

(TASIR)

$Revision: 3802 $

Contents

1 Introduction

In so far as each of the Department's volunteer rescue squads desires to operate its own technical assets (ambulances, duty radios, etc) in the Virginia Beach EMS system, there exists a need to integrate those assets with municipal and regional infrastructure and processes. This document, along with any documents it references, specifies requirements for such integration.

1.1 Desired state

This document is written with the following high-level goals in mind:

- System integration concerns are defined before a procurement begins, and are raised at initiation of the procurement process.

- Such definitions are composed of:
    - Written words
    - Charts
    - Drawings
    - Pictures

- Compliance with these requirements is verified prior to an asset being ordered.

1.2 Continuous process

This document is a work product intended to serve as the "hub" of a dynamic "hub-and-spoke" process driven by progress. The "spokes" of the process include:

1.2.1 Identification of control points in the procurement process

Control points are opportunities to assess compliance with requirements and to address any discrepancies. Currently-identified control points include when:

- A squad becomes interested in procuring a technical asset

- A squad submits a grant application for DEMS or state approval

- A squad submits a loan application for DEMS or city approval

- A squad finishes a purchase or build order, and is ready to sign a contract

- A squad performs an end-of-assembly inspection, or takes delivery of a technical asset

- A squad submits an asset for integration into the Virginia Beach EMS system

- An asset gets refurbished, rechassied, recapitalized, etc

- The city budget planning process begins

The Department and the squad should review this document together at each control point to assess ongoing compliance with requirements.

1.2.2   Identification of Subject Matter Experts (SMEs)

This document is only as legitimate as the endorsements it receives from the appropriate authoritative personnel. As personnel move in, out, and across the workforce and the market, it is important that the Department review this document to assure that its references to, and endorsements from, SMEs are current, correct, and complete.

1.2.3   Interviews with SMEs

The Department should conduct periodic interviews with identified SMEs to review the contents of this document, and to gather:

- New, changed, or obsolete requirements

- Supporting artifacts to include explicitly or by reference

1.2.4   Endorsements from SMEs

The Department should make sure that it gets an explicit endorsement from the appropriate SME for every set of integration requirements for a given system or subsystem. Such endorsements should be in writing and should be attached or otherwise made available with this document.

1.2.5   Advocacy for SMEs at appropriate control points

The Department should take at least each control point as an opportunity to raise stakeholder awareness of SME concerns. The Department acknowledges that the SMEs are not responsible for directly communicating new, changed, or obsoleted requirements directly to the squads, nor are the squads responsible for making direct inquiries to the SMEs. Rather, the SMEs are responsible for communicating changes to the Department, and the Department is responsible for communicating that information to the squads via this document (see 1.1).

2 Business cycles and processes

2.1 Squad procurement cycle

Squad coordinators who are responsible for technical asset procurement should perform most or all of the following "cradle to grave" tasks:

- Recognize the need to procure an asset.

- Ensure adequate squad funds are budgeted (also see section 2.2).

- Develop full specifications using this document as a guide.

- Solicit quotes, bids, or proposals.

- Issue a purchase order or sign a contract according to squad business rules.

- Make sure payments are processed in a timely manner.

- Ensure contract performance (inspect asset thoroughly using specifications and build order as guides).

- For ops assets, turn asset over to ops staff for full commissioning.

- Determine well ahead of time when an asset will no longer be of use or value.

- For ops assets, receive decommissioned asset from ops staff.

- Remove and reallocate useful sub-components (ie, EMS gear, radios, computers, dashcams, power load systems, etc, for a vehicle).

- Remove highly conspicuous squad markings as necessary.

- Initiate final sale or disposal process.

2.2 City budget process

This document is primarily intended to define requirements for integrating squad-owned technical assets into city infrastructure, but in some cases a squad must consider city budgetary issues. For example, in the traditional arrangement for adding an ambulance to the VB EMS fleet, the EMS Department must seek and receive approval to pay for additional fuel, maintenance, city-supplied medical gear, etc. The timeline for this process is enforced by the Budget & Management Services Department, the City Manager, and City Council – not by the EMS Department.

Each budget cycle begins more than nine months before the budget becomes effective and generally proceeds as follows:

September
Headquarters chiefs solicit input from staff on budget needs.

October
Management Services provides the Department with "target" budget figure based on projected revenues, known obligations and other factors as determined by city leaders.

November
Department prepares a two-level request: One that does not exceed the "target" amount, and one that identifies other needs that would exceed the "target".

December
Department submits its two-level request to Management Services.

January
Department negotiates its request with City Manager and his deputies.

February
Management Services reconciles outstanding issues with the Department.

March
Department presents its request to City Council.

April
EMS Chief negotiates its request with City Council and public hearings area held.

May
City Council finalizes the budget for the coming fiscal year.

July
Department begins spending from approved budget.

3 SPECIFICATIONS

3.1 VB911-related radios and mobile data terminals

3.1.1 Mobile (vehicle-mounted) radios

To integrate into the VB911 system, a mobile radio must have the following attributes:

APC	Model	Description
656	M30TSS9PW1N	APX7500 DIGITAL Dual Band Mobile RADIO
656	GA00244	Primary Band 7/800
656	GA00308	Secondary Band VHF
656	GA00579	Enable Dual Band Operation
656	G806	Astro Digital Operation IMBE
656	G51	ENH: SOFTWARE SMARTZONE SYSTEM
656	G361	P25 operation
656	QA01749	ADD: ADVANCED SYSTEM KEY - SOFTWARE KEY
656	G442	Control Head
656	G444	Control Head Software
656	G67	Remote Mount
656	G174	3db gain low profile 762-870MHz HAF4013
656	G792	136-174 Wideband HAD4021
656	W22	Palm Mic
656	G831	15 Watt Speaker
656	W947	Packet Data Interface-included
656	G996	POP25
656	GA00229	Enable Basic GPS
656	QA03399	Enhanced Data for GPS
656	GA00268	RFID Label
656	GA00580	TDMA
185	GA00318	4 year SFS-RSA- One year Std warranty plus 4-total 5 years
207	DS450022	Ant, GPS 5V, Black
207	DS487760	/4" mnt 0-6 GHz SMA In
430	T7914UA00049AA	Radio Mangement License

Mobile radios in ambulances (or other vehicles with a secondary communications area) must also have the following attributes:

APC	Model	Description
656	GA00092	Dual Control Head
656	G628	17' Control Head Cable
656	W22	Palm Mic

3.1.2   Portable (handheld) radios

To integrate into the VB911 system, a portable radio must be a **Motorola APX Series P25 700/800 MHz band** model with the following attributes:

APC	Model	Description
481	Q806	ASTRO digital Operation IMBE
481	H38	Smartzone
481	Q361	P25 Operation
481	QA00583	Bluetooth Software-Included
481	QA01749	Advanced System Key-Included
481	Q947	Packet Data Interface-Included
481	G996	POP25
481	QA00782	GPS Activation
481	QA03399	Enhanced Data for GPS
481	QA00580	TDMA
185	Q887	4 year Radio Repair Advantage
655	QA04526	RFID Knob
562	T1914 UA00049AA	Radio Management License for CPS programming
785	WPLN7080	Single Unit Charger

A portable radio _may_ include the following attributes:

APC	Model	Description
562	QA00574	Secondary Band VHF
562	QA00579	Enable Dual Band Operation
562	QA00577	Front Display Full Keypad
562	QA01427	impact green
785	WPLN7080	Single Unit Charger
372	NNTN8203	XE RSM Green
453	NNTN8029	Spare Battery- LION2300MAH impress FM
481	H499	Delta T submersibility
372	PMMN4069A	RSM 3.5mm Audio Jack
785	NNTN7624B	APX Portable Vehicle Charger

Other options may be allowable upon approval of the SME for VB911-related radio and mobile data terminal purchase specifications.

3.1.3   Mobile data terminals

To integrate into the VB911 system, a mobile data terminal (MDT) must have the following attributes:

Type	Item	APC	Model		Description
CPU	1	736	F5218		MW810 MOBILE WORKSTATION CPU
CPU	1a	736	VA00796		12.1"XGA 1500NIT DISPLAY,60 PIN,W/B
CPU	1b	736	VA00822		ALT : WIN 7 PRO 32BIT OS ON MSATA
CPU	1c	736	VA00079		ADD:COMM & VIDEO I/O EXPANSION BOAR
CPU	1d	736	VA00738		INTEL I7-3610QE, IVY BRIDGE QUAD CO
CPU	1e	736	VA00751		SOLID STATE DISK,256GB W/IMAGE WIN
CPU	1f	736	VA00763		8GB,DDR3, 1600MHZ DUAL SLOT
CPU	1g	736	VA00799		R2.0 DEAD RECKONING GPS MODULE,NO A
CPU	1h	736	VA00806		WLAN,802.11A/G/N,INTEL6300,3ANT. CO
CPU	1i	736	VA00804		WAN1, SIERRA MC7750, VERIZON,NO ANT
CPU	1j	736	VA00817		WLAN ANT., 3X3 MIMO, 12FT
CPU	1k	736	VA00823		WAN1, TWO ANT. FOR MC7750, MAIN/DIV
CPU	1l	736	VA00471		ADD:SMART CARD READER
CPU	1m	736	VA00017		ADD: BLUETOOTH COMMUNICATION
CPU	1o	736	VA00840		KEYBOARD,US
CPU	1p	185	V699AZ		ENH: 2 YEAR RSA MW810R2.0
AuxCable	2	736	FKN0007		AUX CABLE W/TB, AND 2 EXTENDED CURR
GPSAnt	3	207	DSGPSNMO02		Ant, GPS 5V, Black
GPSMount	4	207	DSNMOKHFUDSMAI		3/4" mnt 0-6 GHz SMA In
Monitor Cable	5	10	FKN0004ASP01		(6 Meter 60/60pin CPU to Display cable for R2.0)
	6	170	DSGJ71100913		MW800/810 CUSTOM CRADLE 'VINNY'
	7	170	DSGJLOWSWIVEL		LOW PROFILE SWIVEL MOTION ATTACHMEN

Because an MDT in a vehicle must be able to receive messages when the vehicle is off (unless voltage drop would risk preventing the vehicle from being started), all MDTs installed in vehicles must draw primary power from the following component, which must draw its power from the OEM unswitched battery circuit:

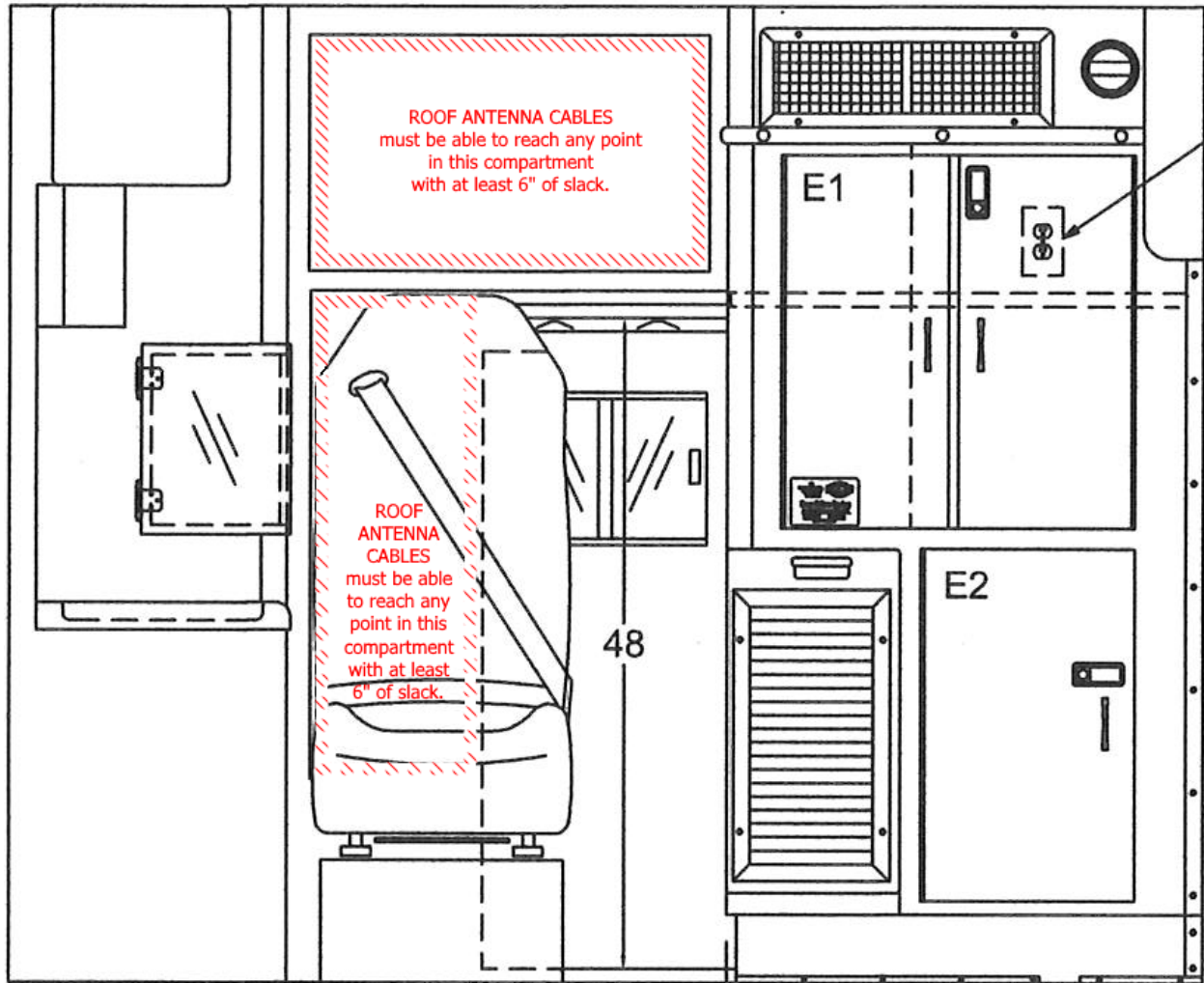- **ACDC Industries MZL-180 voltage-sensing delay timer**

3.1.4 Vehicle antenna placement

To integrate into the VB911 system, a vehicle must have antennas mounted according to sound radio engineering principles. For instance, a vehicle equipped with an approved mobile radio and an approved MDT will have exterior antennas mounted something like this:
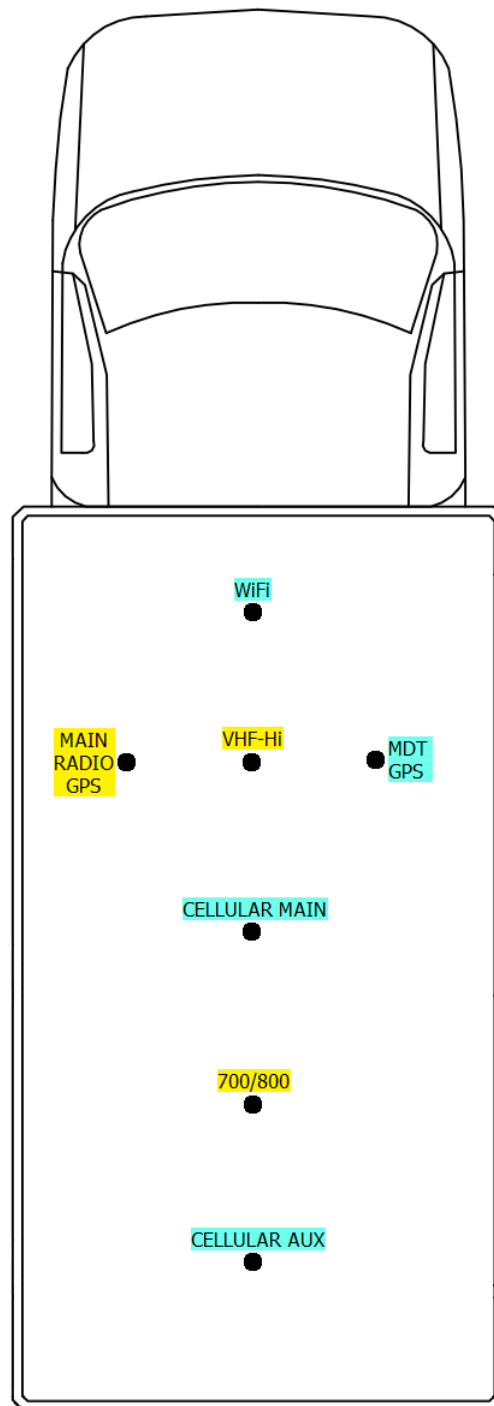
3.1.5 Antenna cable termination points

To integrate into the VB911 system, an ambulance must be equipped with antenna cables that terminate as follows:

ROOF ANTENNA CABLES
must be able to reach any point
in this compartment
with at least 6" of slack.

E1

ROOF
ANTENNA
CABLES
must be able
to reach any
point in this
compartment
with at least
6" of slack.

48

E2

L1

L2

ELECT

ROOF
ANTENNA
CABLES...

...must be able
to reach any
point in these
compartments
with at least
6" of slack.
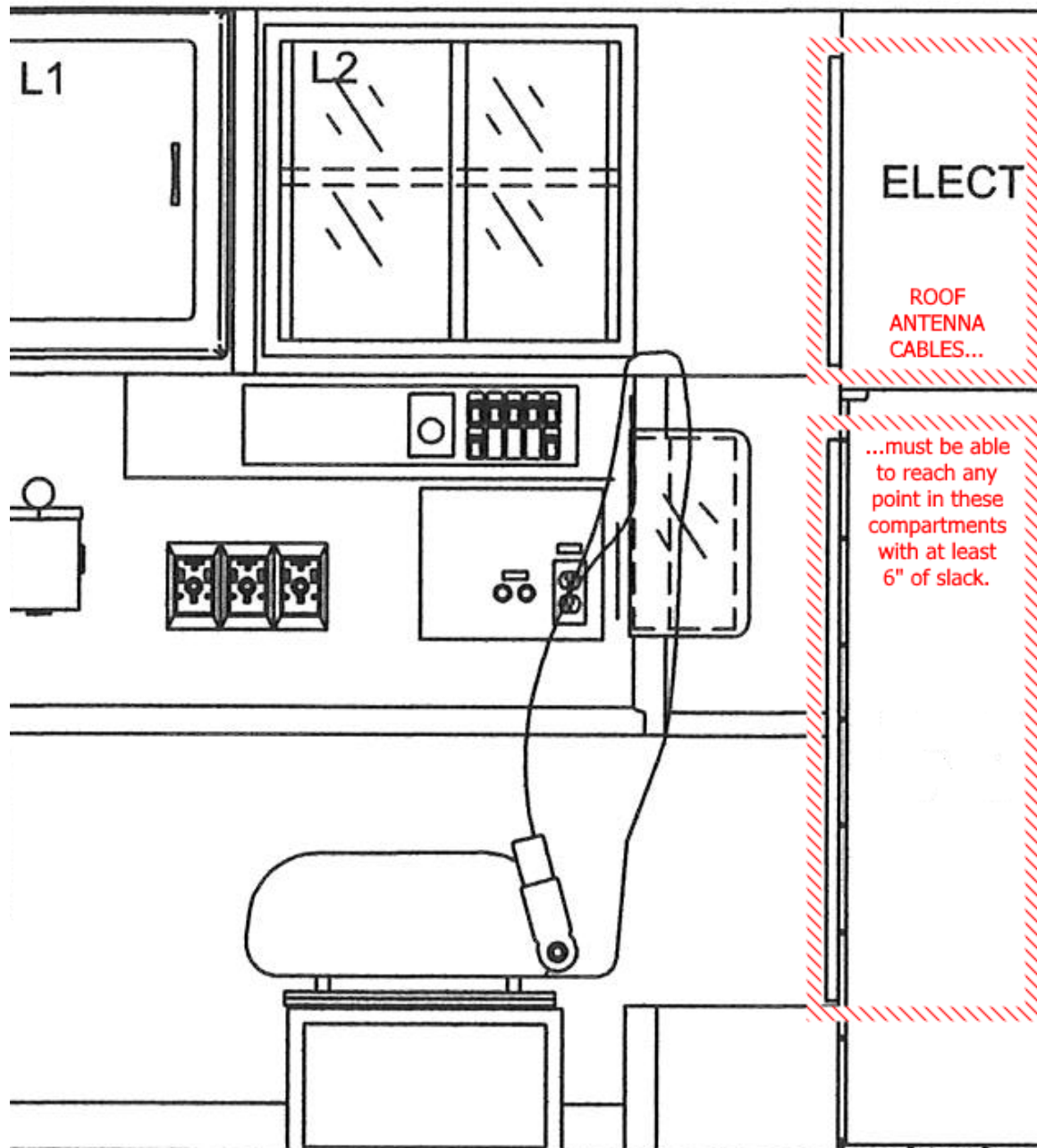
3.1.6 Component mounting and power source chart

To integrate into the VB EMS system, VB911-related radio and MDT equipment must be mounted and supplied with power according to the following chart:

Ambulance IT Component Plan

CAD MDT SYSTEM (MW810C)
- GPS antenna <=>
- Cellular antenna (aux) <=>
- Cellular antenna (main) <=>
- WiFi antenna <=>
- CPU <=> Display <=> Keyboard
- Display <====================> •
- CPU <====================> •

PORTABLE RADIOS (APX6000)
- Chargers <===========> •

"MAIN" RADIO SYSTEM (APX7500)
- GPS antenna <=>
- VHF-Hi antenna <=>
- 700/800 antenna <=>
- MAIN TRANSCEIVER
- Control head & mic 1 <=> Speaker 1
- Control head & mic 2 <=> Speaker 2
- Control head & mic 2 <=======> •
- Control head & mic 1 <================> •
- MAIN TRANSCEIVER <===========> (GPS antenna)
- MAIN TRANSCEIVER <================> •

MOUNTING LOCATION
- Roof
- Electrical/IT cabinet
- Cab console
- Payload module comms panel

POWER SOURCE
- OrigEM IGNition circuit
- OrigEM ACCessories circuit
- CustomEM Master circuit
- Voltage-sensing delay timer circuit (ACDC Industries MZL-180)
- OrigEM unswitched BATTery circuit
- Shoreline circuit

3.2   Chassis, engine, and drivetrain selection

To integrate into the VB EMS system, a new or rechassied ambulance must use one of the following combinations:

- Ford E-450 with V-10 gasoline engine

- Dodge 5500 with 6.7L Cummins diesel engine and AISIN heavy-duty 6-speed transmission (new orders will only be approved after city garage confirmation that adequate local repair facilities exist)

- Freightliner M2 with 6.7L Cummins diesel engine and Allison transmission

3.3   Fuel

To qualify for using fuel supplied by the Public Works Department, a vehicle must run on one of the following fuels:

- ULTRA-LOW-SULFUR DIESEL

- REGULAR UNLEADED GASOLINE

3.4   Traffic preemption systems

To integrate into the city's traffic preemption system, the following requirements must be met:

- The vehicle must be equipped with an OPTICOM INFRARED emitter, although for compatibility reasons the visible light blocking filter is discouraged.

- The emitter must only be active when the vehicle's transmission is in DRIVE and the emergency lights are on.

3.5   Garage space, vehicle aprons, structural additions and modifications

1. To fit inside all VB EMS stations, a vehicle (including protruding items such as mirrors and antennas) must be less than:

   - 118", which is 9'10", in HEIGHT (a limitation of the Thalia station)
   - 142", which is 11'10", in WIDTH (a limitation of the Plaza station)
   - 180", which is 15', in LENGTH (an approximate limitation of the Thalia station)

2. The Department may impose weight restrictions on heavy vehicles to avoid damage to station aprons, etc.

3. A squad must receive approval from both the EMS Department and the Public Works Department Buildings Division before making any substantial additions or modifications to city-owned buildings.

4. The sole authorities for negotiating the use of city-owned building space between the EMS and Fire Departments are the EMS Chief and the Fire Chief. Personnel at lower levels of authority are not authorized to alter existing arrangements. Similar rules shall apply if space is shared between EMS and any other city departments.

3.6   Roadway dimensions and load limits

1. The most limiting bridge that a VB EMS unit may reasonably be expected to cross is the North Landing Bridge on Route 165 (North Landing Road) at the Virginia Beach / Chesapeake city line, which has a weight limit of 13 tons, which is 26,000 pounds. Although emergency vehicles may be exempt from weight restrictions according to state law, a squad must receive approval from both the EMS Department and the Public Works Transportation Division before procuring a vehicle that would exceed the weight limit of the North Landing Bridge.

2. Squads procuring heavy or oversize vehicles should be familiar with Part A Section 5 of the Planning Department Permits & Inspections Division Moving and Hauling Manual[1], and the Public Works Department Operations Division's Blanket Permit Requirements Memo[2] and Blanket Permit Hauling Map[3].

3.7   Regional Drug and IV Box System

If a vehicle is, according to the EMS Department, an <u>addition</u> to the fleet (as opposed to a replacement), and it should carry a regional IV box and a regional drug box, the vehicle owner must arrange to buy <u>double</u> the quantity of IV and drug boxes that will be kept on the vehicle. Half of the procured boxes will be kept on the vehicle. The other half will be kept in standby inventory in the hospital pharmacy system.

Regional IV and drug boxes shall be bought through the regional EMS council.

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[1]https://www.vbgov.com/government/departments/planning/permits-inspections/Documents/form-pdf/MovingandHaulingManual.pdf

[2]http://www.dmv.state.va.us/webdoc/pdf/vbc1.pdf

[3]www.dmv.state.va.us/webdoc/pdf/vbc2.pdf

4 Endorsements

Endorsed as to correctness and completeness:

- SME for VB911-related radio and mobile data terminal purchase specifications:

X_____ **Date:**_____

Neil Kunzler, Senior Account Manager
Government & Public Safety Mobility
Motorola Solutions Inc.
1289 Holly Point Rd
Virginia Beach VA 23454
tel:757-481-6096
tel:757-377-5374 (cell)
fax:757-412-0776
Neil.Kunzler@motorolasolutions.com

- SME for VB911-related radio and mobile data terminal installation and maintenance:

X_____ **Date:**_____

Marc St Clair, Systems Engineer
ECCS Network Support
Telecommunications Area
ComIT Department
mstclair@vbgov.com

- SME for selection, maintenance, and repair of vehicle chassis, drivetrain, suspension, engine accessories, and roadworthiness features:

X_____ **Date:**_____

Reggie Padgett, Fleet Manager
Automotive Services Division
Public Works Department
tel:757-385-1925
rpadgett@vbgov.com

- SME for fuel:

X_____ **Date:**_____

Reggie Padgett, Fleet Manager
Automotive Services Division
Public Works Department
tel:757-385-1925
rpadgett@vbgov.com

- SME for garage space, vehicle aprons, and structural additions and modifications:

X_____ **Date:**_____

Barry Shockley, Facilities Manager
Buildings Division
Public Works
tel:757-385-8558
bshockle@vbgov.com

- SME for traffic signal preemption:

    X_____ **Date:**_____
    Brian Proctor, Civil Engineer
    Traffic Engineering Division
    Public Works
    tel:757-385-4387
    bproctor@vbgov.com

- SME for roadway dimensions and load limits:

    X_____ **Date:**_____
    ?
    Transportation Division
    Public Works

- SME for regional IV and drug box program:

    X_____ **Date:**_____
    David Coulling, Regional Field Coordinator
    Tidewater EMS Council
    tel:757-963-2325
    coulling@vaems.org