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## Cupertino Amateur Radio Emergency Service

Topic: Cupertino Communications Van update

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Date: Thursday, 1 September 2011, 19:30

Event: Cupertino ARES meeting, Orientation Training

# Cupertino Comm Van



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# Comm Van

## Situation

- CARES still experiences severe interference from County Comm because of Radio Cupertino 1670 AM.
- A vehicle was donated by San Jose State University to Cupertino
- A city hall rebuild is not funded but is needed due to space constraints.
- Separate funding has been allocated to (i) relocate the AM antenna, and (ii) build a mobile communications platform for Cupertino.
- The city has elected to proceed with the Comm Van project to mitigate the cost of an AM antenna move.
- And other considerations...

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# Comm Van

How will it be used?

## **EOC Support, City Hall**

- Relocate CARES radio room operations from the basement of City Hall to the Comm Van
- Use tools, methods, and procedures to tightly integrate Comm Van Operations with EOC operations.

## **Remote Command Post**

- Provide communications support to field operations as needed.

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# Comm Van

Who is doing the work?

## **City of Cupertino, Service Center**

- City Project Management for the project
- Holds the budget

## **CARES**

- Developing the requirements

## **Telepath Corp**

- City of Cupertino contractor for City comms
- Wireless communication systems integrator
- Provide command and control programs, including VOIP Two-Way Radio Systems, Security Camera Systems, access control, wireless networking, emergency vehicle build-up, and more to high-tech manufacturing, transportation, utilities and public safety entities around the world.
- <http://www.telepathcorp.com/>

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# Comm Van

## Communications systems

### Amateur Radio

- 2m/440 voice, Kenwood TM-710
  - CARES RRO
  - Resource NCO
  - County Msg Net / Packet / HF
  - Shift Supervisor
  - Aux cab position (CARES to provide this radio)
  - All operator positions include boom mike headset and foot switch
- HF Voice, CW: Icom IC 7000, Tuner
- Packet: Alinco DR-235, KPC3
- ATV Receiver (tentative)

### City Radio

- 450-512MHz, City Trunk Radio system

### County

- EOC-to-EOC, 37MHz

### Other

- Scanner, public safety, from CARES Radio Room
- We may be the keepers of the School District Radios (**need to clarify**)
- Over air TV receiver

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# Comm Van

## Power systems

### **12 VDC systems**

- 2 - 120Ah batteries
- All 12VDC loads are sourced directly from the batteries
- 12 VDC breaker panel, Volt, Amp meter
  - Loads: radios, lighting, DC outlets, mast wench

### **120 VAC systems**

- All 120VAC loads are sourced from an inverter off the batteries
- 120 VAC breaker panel
  - Loads: Air Conditioner, AC outlets

### **Charging systems**

- Battery Charger, 40A, sourced from
  - Generator
  - Shore Power
- Solar Panel

### **Power distribution**

- AC, DC, LAN outlets at operating positions

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# Comm Van

## Information Systems

### Network

- 8-Port Ethernet 10/100/1000 switch
- LAN ports at all operating positions
- Plan for operating PCs and printers on “*VanNet*”

### EOC Access

- The Plan is to establish a network connection with the EOC. It may not be on the City Hall network.
- ***This needs further definition***

### SCEWN Access

- Santa Clara Emergency Wireless Network
- A non-profit cooperative dedicated to providing back up network connectivity to key public service end points in the event of a disaster.
- Using low cost WISP equipment (Wireless Internet Service Provider)
- Current wireless links using 2.4 GHz and 5.8 GHz microwave bands under FCC Part 15 regulations
- ***This needs further definition***

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# Operating Environment

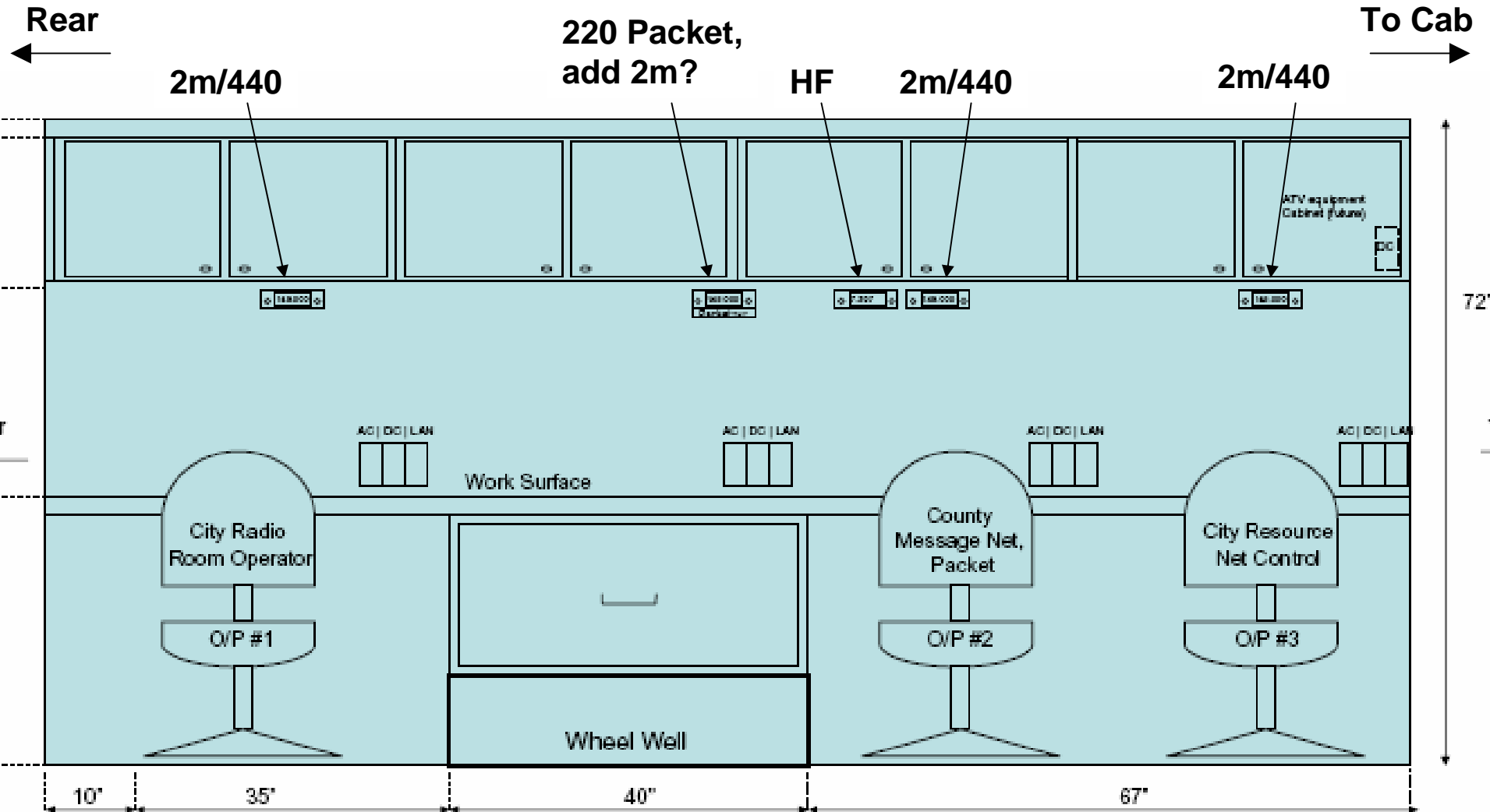
## Inside

- 3 seated operating positions
- 1 supervisor position
- 1 auxiliary position (passenger site, cab area)
- White-boards, write-able surfaces
- Cloth-wrapped for sound dampening
- LED isle and operating lighting
- Storage for manuals, forms, equipment, supplies



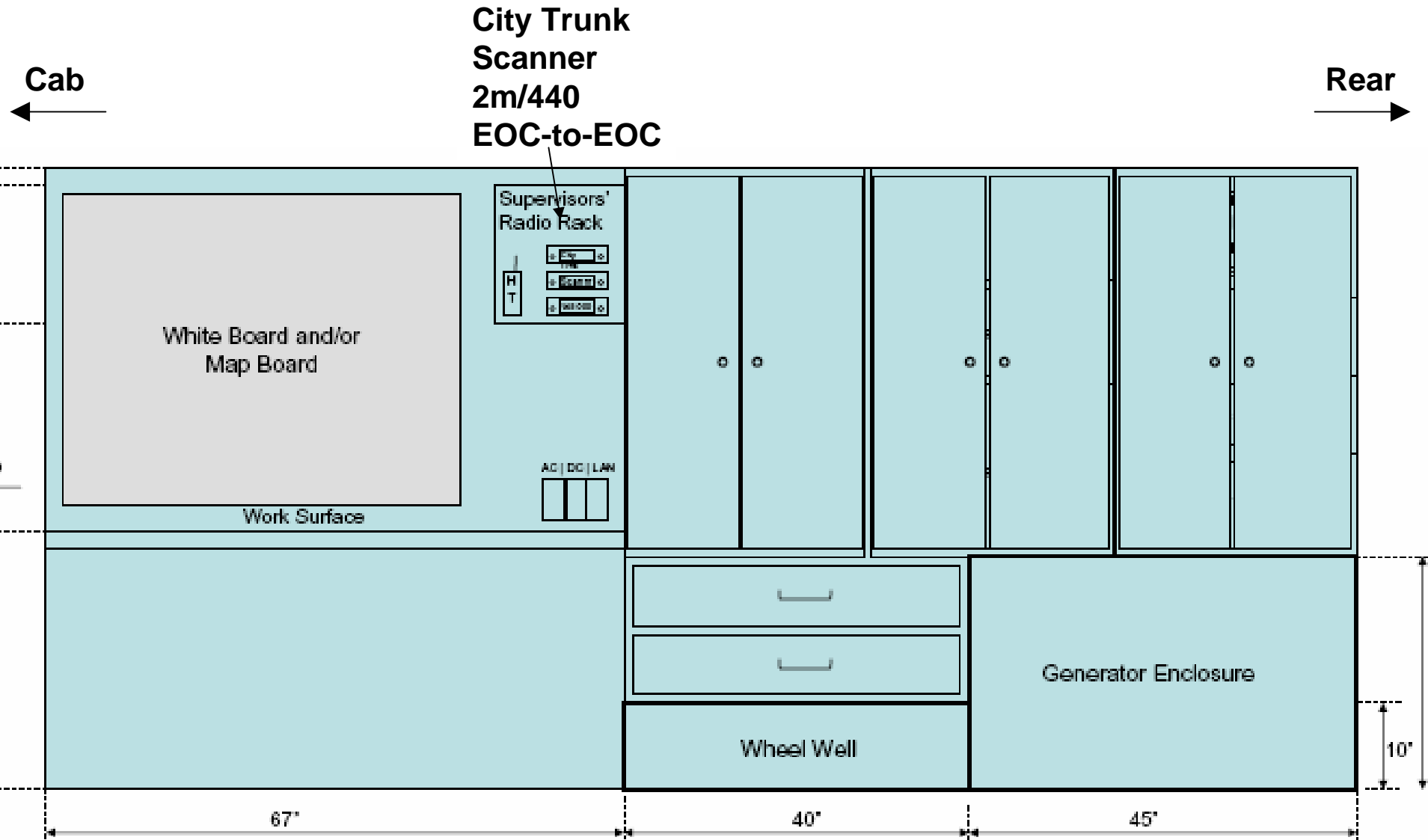
# Operating Environment

Inside – drivers side



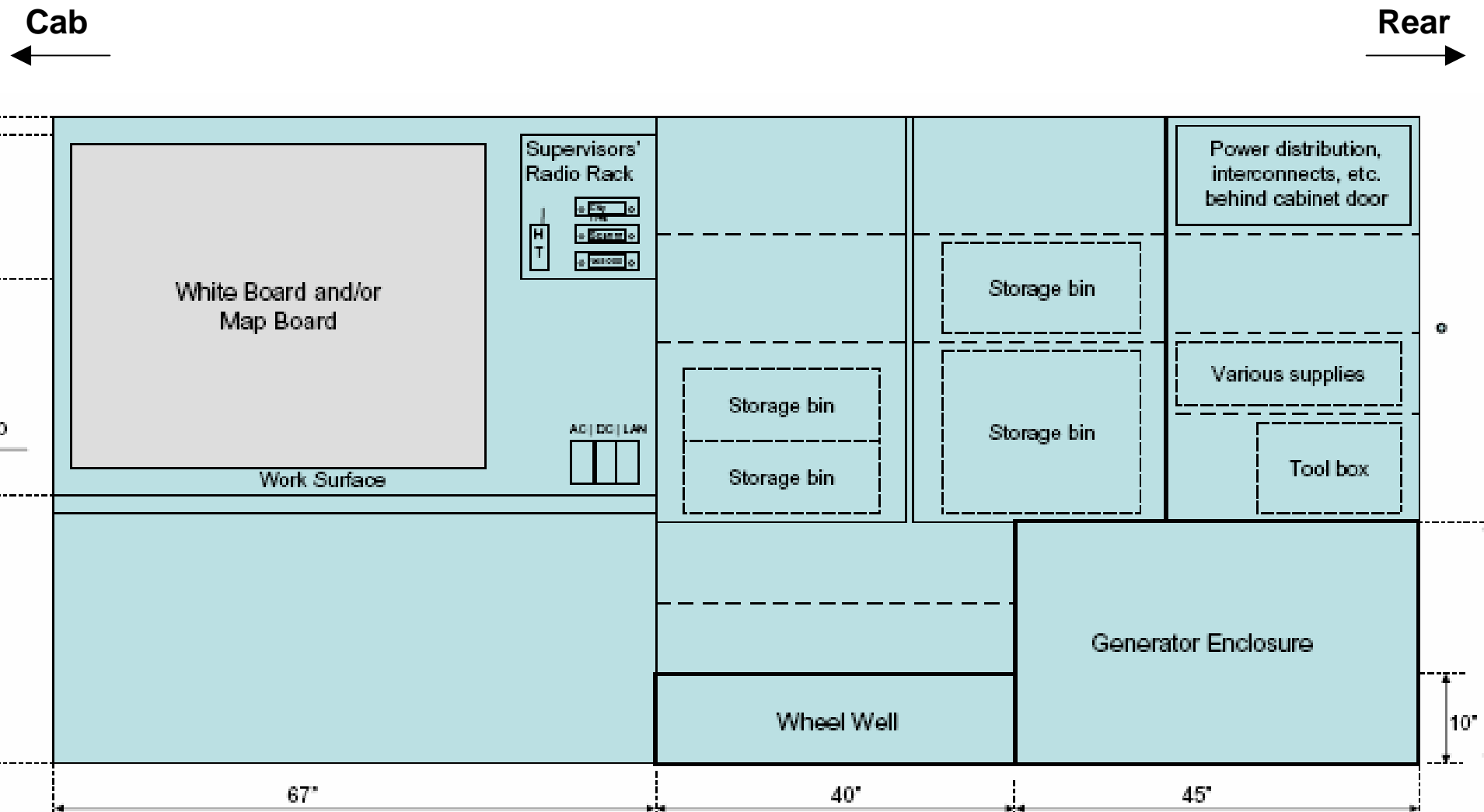
# Operating Environment

Inside – passenger side



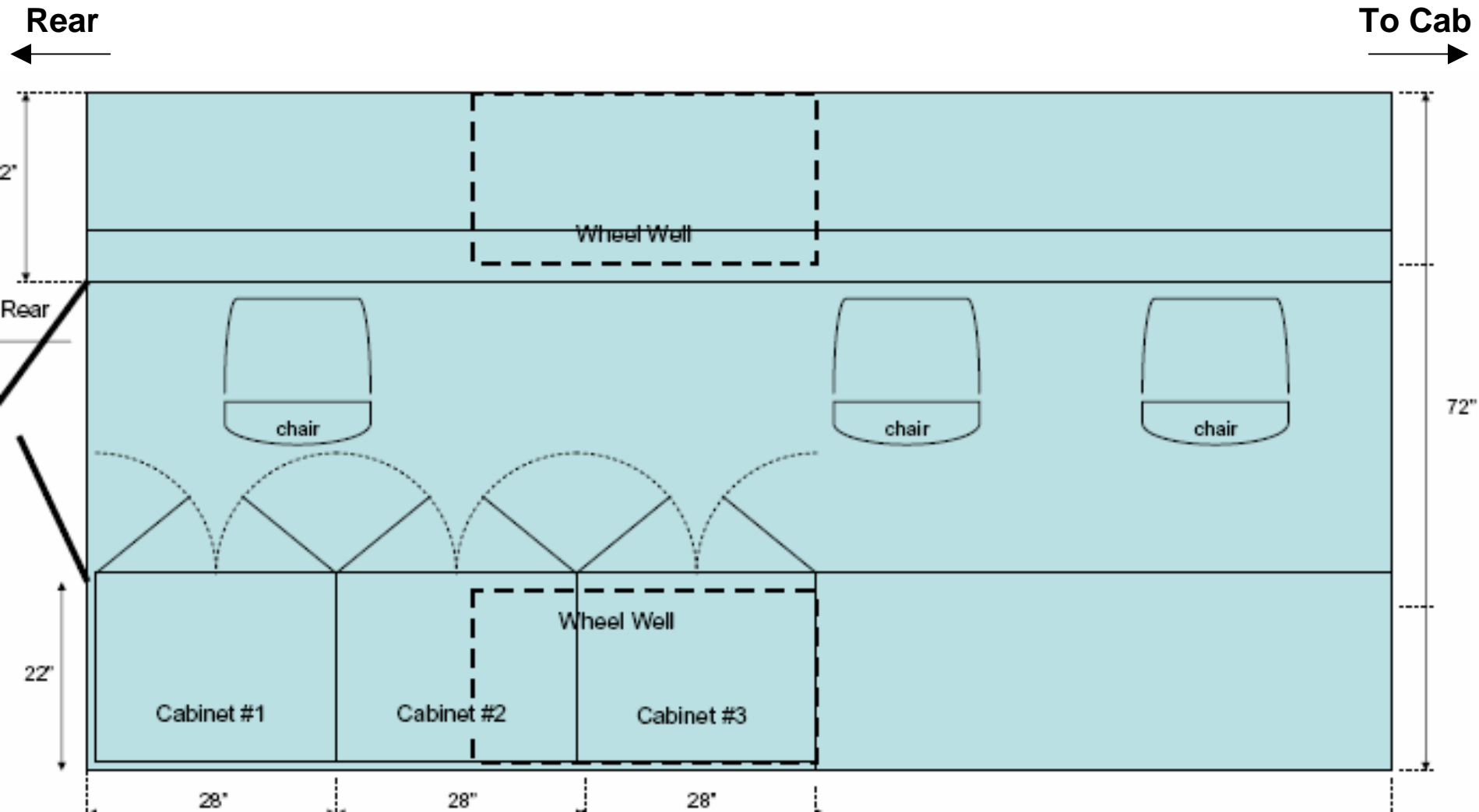
# Operating Environment

Inside – passenger side



# Operating Environment

Inside



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# Operating Environment

## Outside

- Awning installed on the driver side
- Pass-through for power, network, etc
- Van to carry (at least) 1 folding table, 2 folding chairs
- External lighting



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# Antenna systems

## Mast-mount antennas

- 34ft retractable mast
- Mounting plate for 4 antennas
  - CARES TAC 1 simplex (147.570)
  - CARES TAC 2 simplex (146.460)
  - 220 Packet
  - Supervisor's position, TAC 3 (440.150)
- Need some help here... ***we will de-sense each other!***

## Roof-mount antennas

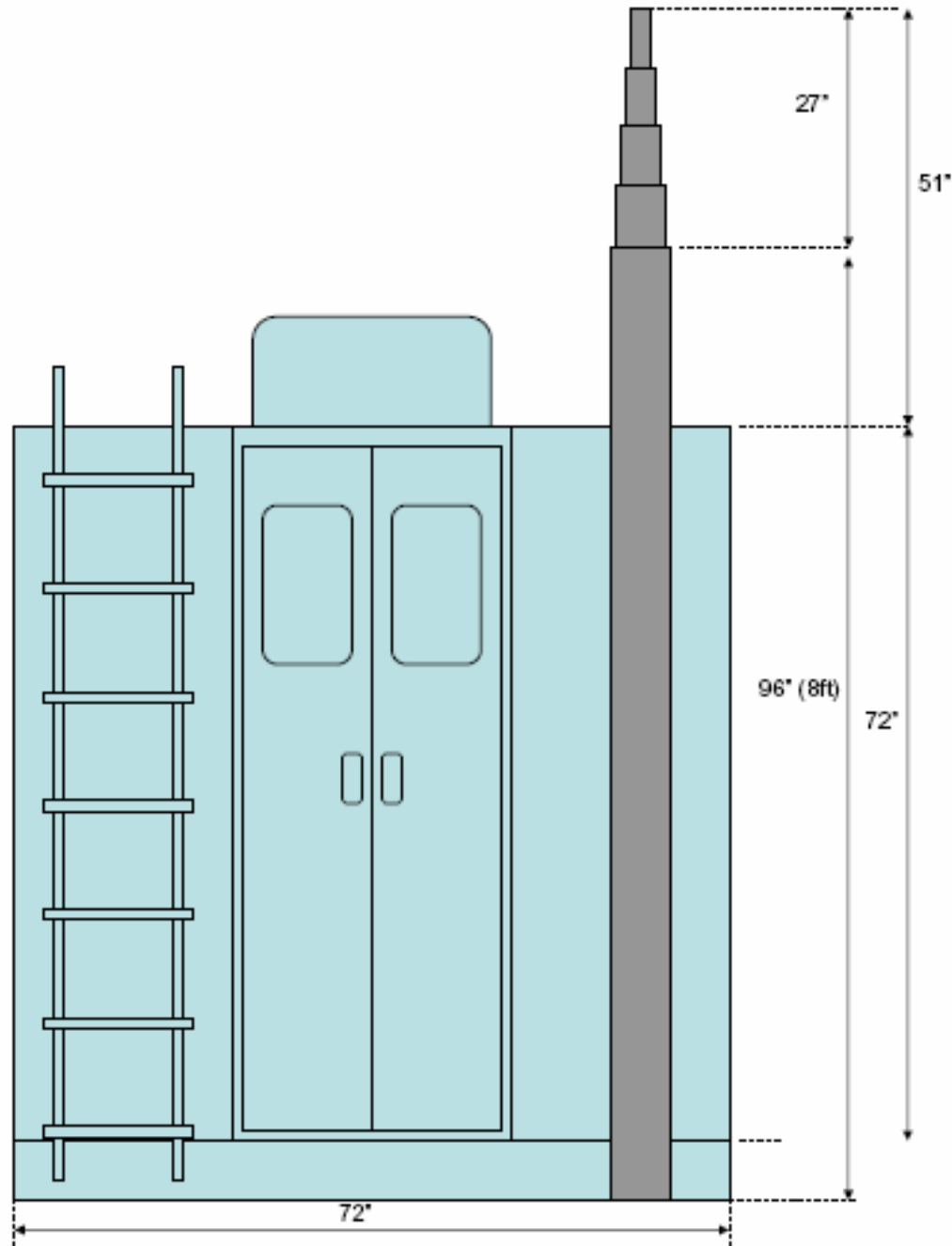
- HF
- City trunk radio system
- Cab Aux position
- Over air TV

# Antenna systems

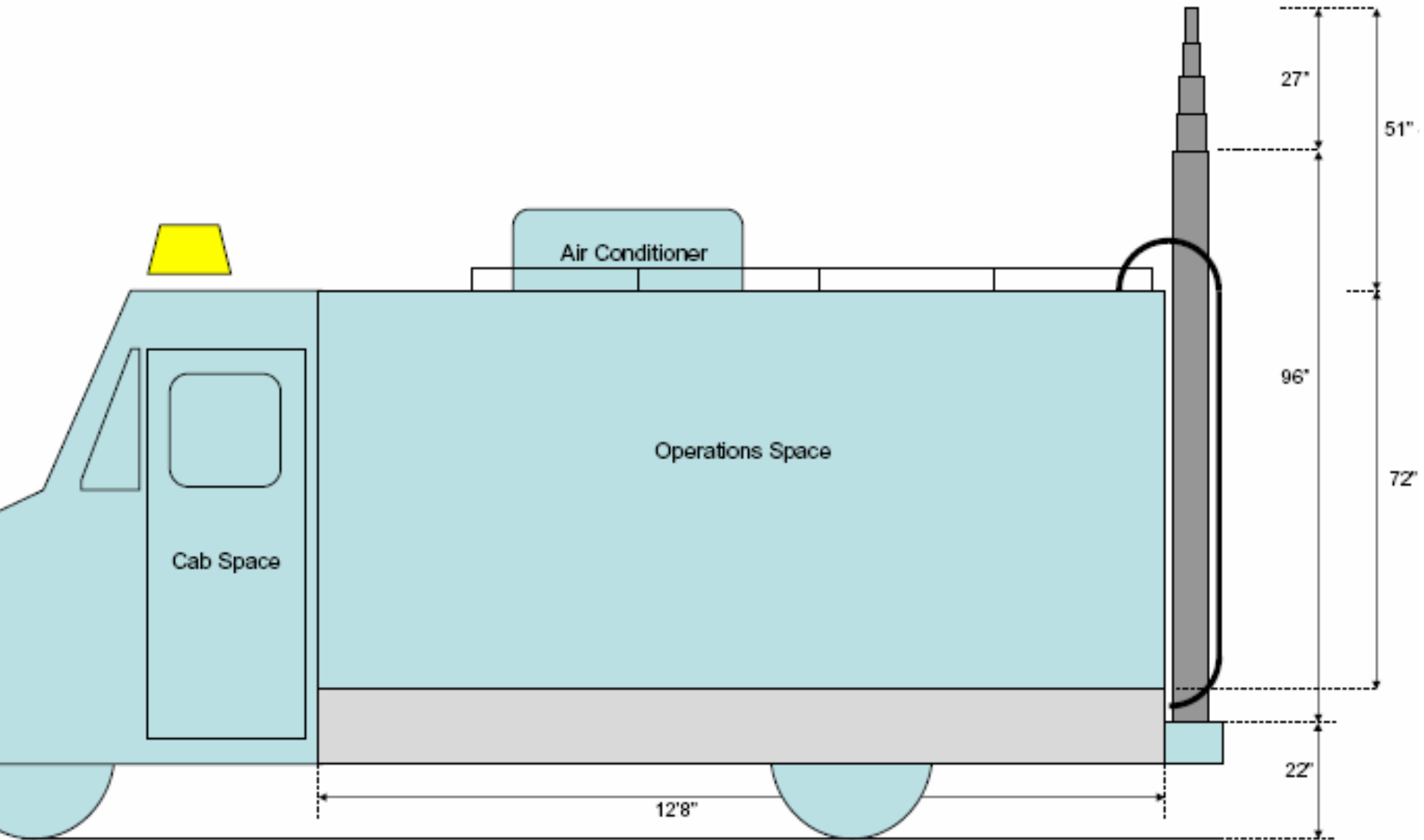
Mast view only

## Notes

- Need to set up antennas – mounting plate, antennas, coax – each time we operate.
- Antennas, coax stowed when not in use



# Antenna systems





# Activities

<b>Task</b>	<b>Who performs</b>	<b>Description</b>	<b>Start</b>	<b>End</b>
General Outfitting	Almaden RV... <b>DONE!</b>	<ol style="list-style-type: none"> <li>1. Awning</li> <li>2. Two vents</li> <li>3. Solar panel and batteries</li> <li>4. Passenger Seat</li> <li>5. Bumper mount for additional generator</li> </ol>	15-Aug	<b>Done!</b>
Driver Quals	City Risk Mgr, CARES... <b>IN PROGRESS</b>	<ol style="list-style-type: none"> <li>1. Approval of qualification procedures</li> <li>2. Identify the list of candidates</li> <li>3. Initial qualifications</li> </ol>	22-Aug	4-Nov
Floor insulation	City supplier... <b>DONE!</b>	<ol style="list-style-type: none"> <li>1. Spray-on protective lining, all floor surfaces</li> </ol>	26-Aug	2 Sep
Comm Installation	TelePath... <b>IN PROGRESS</b>	<ol style="list-style-type: none"> <li>1. All work surfaces and cabinets</li> <li>2. All wiring and cabling</li> <li>3. Power systems and controls</li> <li>4. Radios, roof-mount antennas</li> <li>5. Vehicle Alarm, exterior safety lighting</li> </ol>	6-Sep	29-Sep
General Outfitting	Almaden RV...	<ol style="list-style-type: none"> <li>1. Trailer hitch</li> </ol>	3-Oct	7-Oct
General Outfitting	City Service Center	<ol style="list-style-type: none"> <li>1. Front bumper Generator installation</li> </ol>	10-Oct	14-Oct
Mast Installation	Telepath	<ol style="list-style-type: none"> <li>1. telescoping mast, cables, antenna</li> </ol>	17-Oct	21-Oct
Supply Outfit	CARES, City	<ol style="list-style-type: none"> <li>1. Identify comm van supplies</li> <li>2. Identify packaging, placement</li> <li>3. Acquire containers, supplies</li> </ol>	29-Sep	21-Oct
Operating Procedures	Telepath, CARES, City	<ol style="list-style-type: none"> <li>1. Develop 1<sup>st</sup> release of operating procedures, checklists, etc</li> </ol>	1-Oct	14-Oct
Commissioning	Telepath, City, CARES,	<ol style="list-style-type: none"> <li>1. Field Tests</li> <li>2. Acceptance, Sign-off</li> </ol>	21-Oct	4-Nov

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# City's requirements for drivers

1. Valid California Drivers License
2. Registered Cupertino Volunteer
3. Valid City Volunteer Card/DSW
4. Registered CARES member in good standing
5. Pass a LifeScan screening (wants and warrants)
6. Approval for the city to periodically pull DMV record
7. Complete City's Defensive Driver class
8. Vehicle operations check-out by Service Center (operators must be able to drive a stick shift)
9. Complete Comm Van qualification
10. Approved by the City's Risk Manager

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# Need resolution on the following

## Networking

- Help define the *VanNet* subnet environment
- Work with SCEWN on linking into the SCEWN net

## Antenna systems

- Address how to minimize interference from mast-mounted antennas

## Procedures

- Resolve driver qualification with the City
- Develop the operating procedures

## Parking

- Resolve where the vehicle is parked



Cupertino  
ARES/RACES

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# As received from SJSU – 2006



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# As received from SJSU – 2006



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# First cleanup, Pre-installation – June 2011

