

Ellis & Watts, International

4400 Glen Willow Lake Lane
Batavia, Ohio 45103

SITE PLANNING

FOR

GENERAL ELECTRIC

DIGITAL MAMMOGRAPHY SYSTEM

E&W MODEL # VF200

GE MODEL # EMAM_F (SENOGRAPHE 2000D)

GE MODEL # EMAM(E) _ (ESSENTIAL)

REV. A USED ON VF204 AND UP

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SECTION 1 **INTRODUCTION**

- 1.1 The following is set up to assist in the preparation of a site for the Ellis & Watts Mobile Digital Mammography coach.

Site Planning includes that portion of the Mammography project in which the location and orientation of the Mobile Mammography System is selected. Also referenced are the concrete pad, power, telephone and water necessary prior to installation.

Installation looks at all activities which take place once the Mobile Mammography System has been prepared for shipment, through power hook up at the site.

1.2 **Division of Responsibilities**

The following shows the division of responsibilities between Ellis & Watts and the customer. Any exceptions should be communicated to Ellis & Watts in writing as early in the planning stages as possible to avoid delays in the schedule.

Ellis & Watts will provide:

- Service Technician to familiarize owner/operator with features and operation of unit.
- Standard price does not include transportation from Ellis & Watts to site, but Ellis & Watts can provide this service for additional cost.

Customer to provide:

- Transportation of unit to site including any required permits.
- Foundation constructed in compliance with this document and attached drawings including plumbing and electrical. Depth of foundation below grade shall meet applicable local and national codes. A local structural engineer must design the pad.
- A reasonable means of entry and exit for the unit. Approximate total length of Mobile Mammography System is thirty-six feet (36') to forty-two feet (42').
- Labor to connect telephone electrical power, and plumbing if required.
- Any local or state building permits. (For both the Pad & the Mobile Unit)

- Any connecting corridor or walkway.

Permits to comply with local and/or national codes with regard to the radiation field and its surrounding environment. The mobile Mammography unit is constructed with lead shielding in the area of the gantry.

Note:

**To power up and operate your Mobile Mammography System,
consult the Operator's Manual.**

Please contact Ellis & Watts Site Planner at 1-513-752-9000 for any questions that you may have.

SECTION 2 SITE PLANNING

2.1 **Location**

Locating your Mobile Mammography System is a function of the criteria you have developed for your operation and location of vehicular traffic relative to the unit. A list of criteria might include:

- A) Proximity of personnel who might be continuously exposed to low level radiation which is not contained by the lead shielding in the van. It is the customers responsibility to ensure that appropriate radiation protection exist for persons in proximity to the mammography operation.
- B) Length of walkway to hospital or other facility.
- C) Side of building for best patient access.
- D) Adaptability to landscaping.
- E) Compatibility between air conditioners and surrounding facility.
- F) Acceptable clearances and ventilation for generator airflow.
- G) Impact of vibration and noise.
- H) Flat level areas for optional patient lift operation.

The Mobile Mammography coach houses a Mammography unit at the rear with a patient door towards the front. Chosen orientation should include consideration of surrounding structures or vehicles and equipment that produces vibration. These items can degrade image quality.

. The following items are examples of moving objects that may affect image quality:

Trucks, Buses, Automobile Traffic, Emergency Vehicles

The Mammography coach is constructed with lead shielding in the front and rear partition walls in the area of the gantry.

The suspension on the coach is designed for normal highway service. Do not operate the coach off-road, over the breaks at the beginning and end of steep inclines or on otherwise irregular surfaces. The leveling and load compensation system is limited and excessive displacements can cause severe axle/suspension overloading.

It is wise to consider the approach that the coach will have to make in order to reach the designated parking site or service site.

2.2 Support Pad

It is necessary to consult with an architect with regards to soil conditions and local building codes prior to designing a support pad.

Pad to be level within 1/2" over 10 ft. The leveling system has a limited ability to compensate for pads that do not meet this specification. When leveling the coach, if the "Excess Slope" light comes on, the coach will not be able to be leveled and should be moved to a new location. If the coach cannot be relocated, obtain the services of a professional rigging company knowledgeable in siting mobile medical systems to ensure safe and proper leveling.

The recommended concrete pad size is 21'- 6" wide x 45' long. The minimum concrete pad size is 10' wide x 40' long (does not allow ample space for stairs, lift and service access).

An optional wheelchair lift is available as well as stairs for patient/operator access.

2.3 Power

The Mobile Mammography System utilizes 125 amp, 220 volt, 1 phase, 4 wire power for the Mammography system and HVAC system.

A standard 25' shore power cable is located in the rear belly compartment. This cable can be accessed from curbside. One end is already hardwired into the coach's electrical system. The free end of this cable has a Hubbell connector attached for compatibility with the site's 220 volt, 1-phase receptacle. **Connection of shore power is to be performed by local, qualified electricians only.**

2.3.1 Power Distribution Requirements

Receptacle Voltage (Nominal)	220 VAC, 1-phase, 4-wire with ground and neutral
Voltage Variations	220 VAC ($\pm 10\%$) (198 VAC to 242 VAC)
kVA Dedicated Power (Note: nothing else is to be connected to this circuit)	30KVA
Supply Circuit Breaker/Fuses	125 AMPS

Line Voltage Balance	All lines within 2% of lowest line voltage.
Frequency	60 Hertz \pm 3 Hz (\pm 5%)
Regulation	4% Max at 30 KVA max power demand
Feeder Size	Less than 2% voltage drop at max power demand of 30 KVA. Minimum AWG #1/0 THHN recommended.
Transients	Transients, other than those created by the Digital Mammography System, shall not be more than 800 volts peak (on a 220V line) with a duration of less than 75 micro seconds.
Ground Conductor	An insulated copper ground conductor, sized in accordance with national and local codes, but not less than AWG #1/0, shall be installed between the facility vault and the Hubbell receptacle. This ground shall not have a resistance to earth of more than 2 ohms.

2.3.2 Installation of Mobile Mammography Imaging System To Existing Power Distribution System

For installation of a Mobile General Electric Digital Mammography Imaging Unit at a existing site where the mobile unit will be furnished electrical power from an existing power distribution system through a power distribution panel, the Mobile Mammography Imaging unit must be provided power through a dedicated branch circuit having no less than 30 KVA available power.

2.3.3 Installation of Mobile Mammography Imaging System To Dedicated Site Power Distribution Transformer

For installation of a Mobile General Electric Digital Mammography Imaging Unit, where the site power distribution transformer will feed only the Mobile Unit System, the minimum recommended size power distribution transformer is 30 KVA.

2.3.4 Mobile Grounding Requirements

Note:

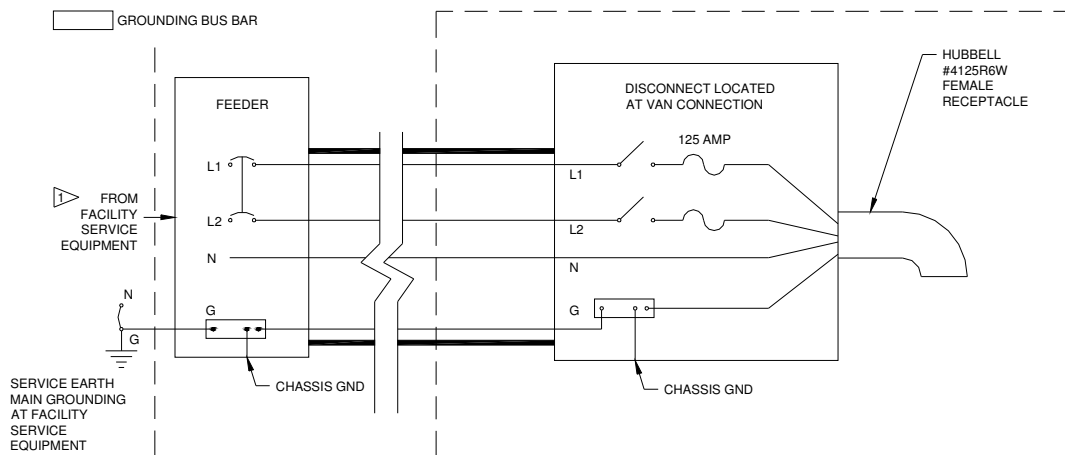
- **All work to be done in accordance with national and local electric codes. Information shown here is only a recommendation and must be verified for**

site national and local codes.

- Ground wires inside enclosures to be taped green for entire visual length for identification.



Main bonding jumper between grounded (neutral) conductor and equipment grounding conductor to be provided in facility service equipment and downstream at separately derived system transformer secondary as shown.



GROUNDING

The ground for our system shall originate at the system power source, i.e., transformer or first access point of power into a facility, and be continuous to our system power disconnect in the room. This ground can be spliced with “High Compression Fittings” and should be terminated at each distribution panel it passes through. When it is broken for a connection to a panel, it shall be connected into an approved grounding block with the incoming and outgoing ground in this same grounding block, which is then connected to the steel panel. Never use the steel panel or other material of the panel as the block.

The connection at the power source shall be at the grounding point of the "Neutral-Ground" of a "Wye" transformer, or typical grounding points of a separately derived system.

In the case of an external facility, it shall be bonded to the facility ground point at the service entrance.

GROUND WIRE

The ground wire shall be copper wire with a minimum size of AWG 1/0 or the same size as the power feeders whichever is larger. This means that if there is a primary feeder to a distribution panel is 500 MCM with a secondary feeder to our system of AWG 1/0 wire, the ground to the distribution panel shall be 500 MCM with an AWG 1/0 to our system. The ground wire impedance from our system disconnect, including the ground rod, shall not have an impedance greater than 2 ohms to earth as measured by one of the applicable techniques described in Section 4 of ANSI/IEEE Standard 142 – 1982.

Special Notes:

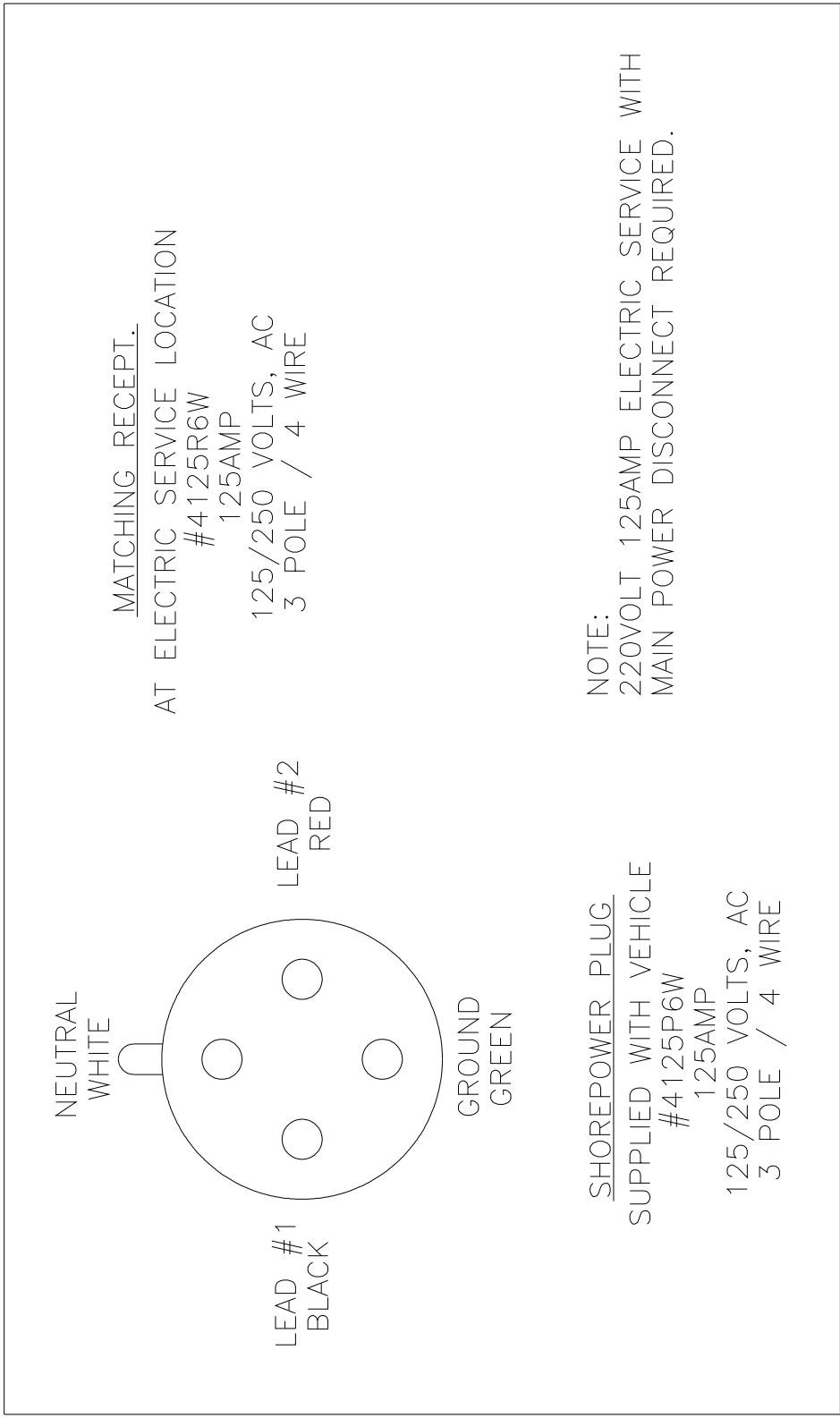
It is also recommended that a separate (#6 minimum copper) grounding conductor be installed from the main coach ground lug in the rear curbside belly compartment to a driven ground rod as a supplemental grounding conductor for the coach. When running (scanning) on generator, the copper wire from the earth ground rod to the coach ground lug must be installed and used at all times per the NEC.

All specifications apply to measurements at the receptacle pins. Line voltage drops from the facility mains to the receptacle must be included in all power calculations.

Instantaneous fluctuations in the line voltage caused by loads other than this Mobile Digital Mammography Imaging Unit must not exceed $\pm 5\%$, have a duration in excess of five (5) cycles, and frequency of their occurrence must not be more than ten (10) times per hour.

Power lines from the site source to the coach are not to be run underneath or above the Mammography system. If it is necessary to run the wires underneath or above the unit, route them so as to avoid the area underneath or above the gantry area.

Customer must install a label stating: "SERVICE DISCONNECT FOR Mobile Digital Mammography Unit" at hospital-power-source.



2.5 **Telephones/Data**

One separate telephone line, and one cat 5 data line are terminated at the rear curbside area of the coach. The telephone receptacle is Hubbell PH6595. The customer must install Hubbell receptacle's PH6597. The cat 5 receptacle is Leviton 41108-RWS.

Hospital and local phone lines are to be brought to these lines by the local phone service company.

The category 5 jacks in the trailer are wired to meet T568B color code wiring pattern.

2.6 **Air Conditioners**

The air conditioning/heating system is mounted on the rear of the coach. The air grilles must remain clear of obstructions (minimum 4-foot clearance) to permit adequate airflow.

2.7 **Local Codes**

Although the Mobile Digital Mammography system is manufactured according to stringent quality engineering standards, it is wise to consult local and/or state code authorities well in advance of installation to avoid any unnecessary delays in the event that special permits are required. In many states and localities, approval has already been granted.

SECTION 3 **INSTALLATION**

3.1 **General**

The Mobile Digital Mammography System represents a substantial investment and should be handled with a representative amount of care and expertise. The following subsections are indicative of the steps to be taken for a successful installation.

3.2 **Packaging**

The Mobile Digital Mammography System is released from the factory only after it has met the Digital Mammography system manufacturer's and Ellis & Watts specifications. All portions of the Digital Mammography system are in place - no articles are loose in the unit. Therefore, once installation of the Mobile Digital Mammography System is complete, only activities typically associated with system start up at a fixed site remain.

3.4 **Weight**

Approximate weight of van and system is 28,500 pounds.

Sited: Approximately 19,000 pounds on rear stanchions, and 9,500 pounds on front jack support legs.

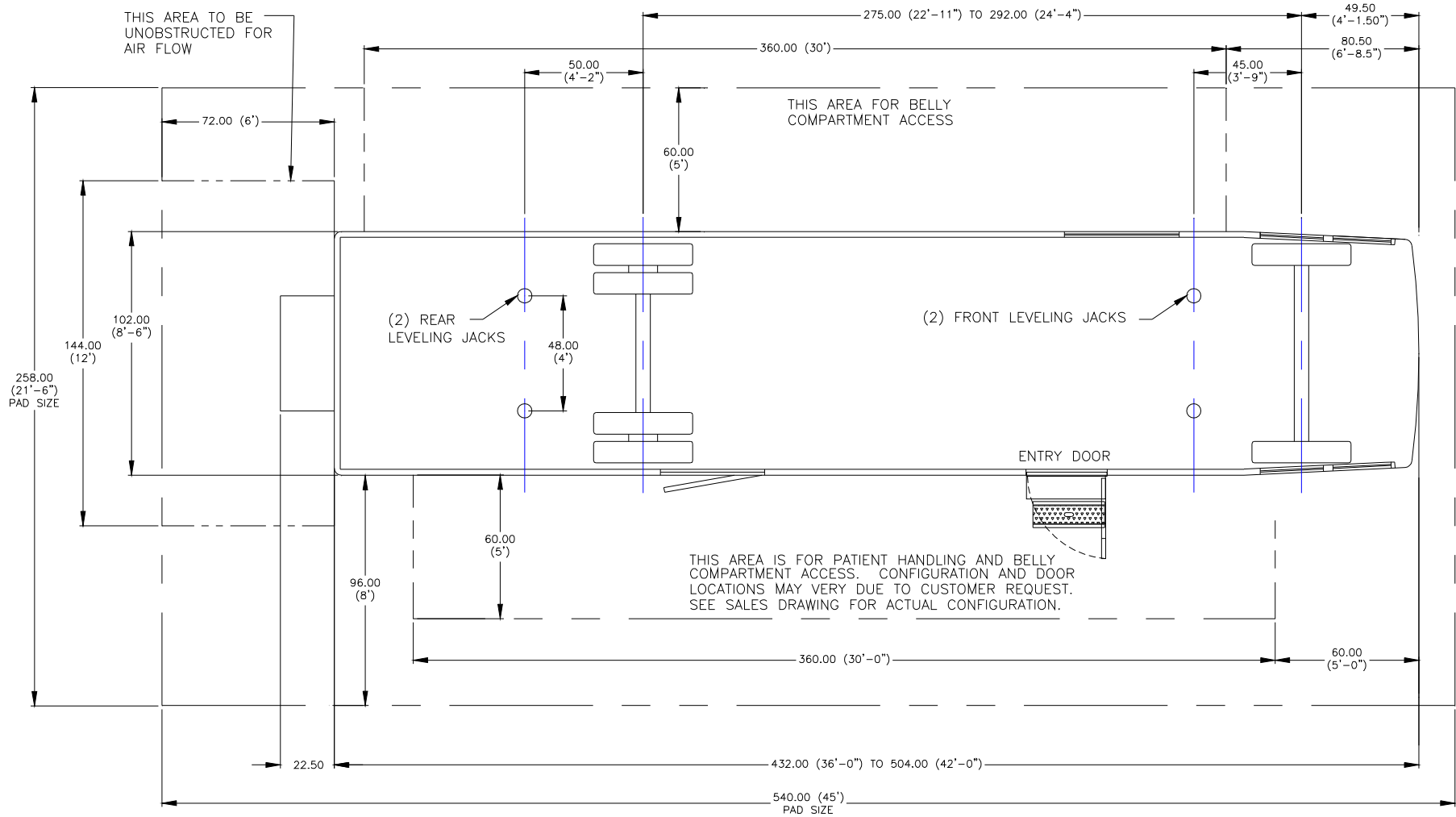
3.5 **Locating the Mobile Digital Mammography System**

When the coach arrives on site, the driver will view the particular access situation. The driver will then be able to determine the best possible approach strategy to the designated parking site for the Mobile Digital Mammography System.

The suspension on the coach is designed for normal highway service. Do not operate the Coach off-road, over the breaks at the beginning and end of steep inclines or on otherwise irregular surfaces. The leveling and load compensation system is limited and excessive displacements can cause severe axle/suspension overloading.

3.6 **Radiation Field Warnings**

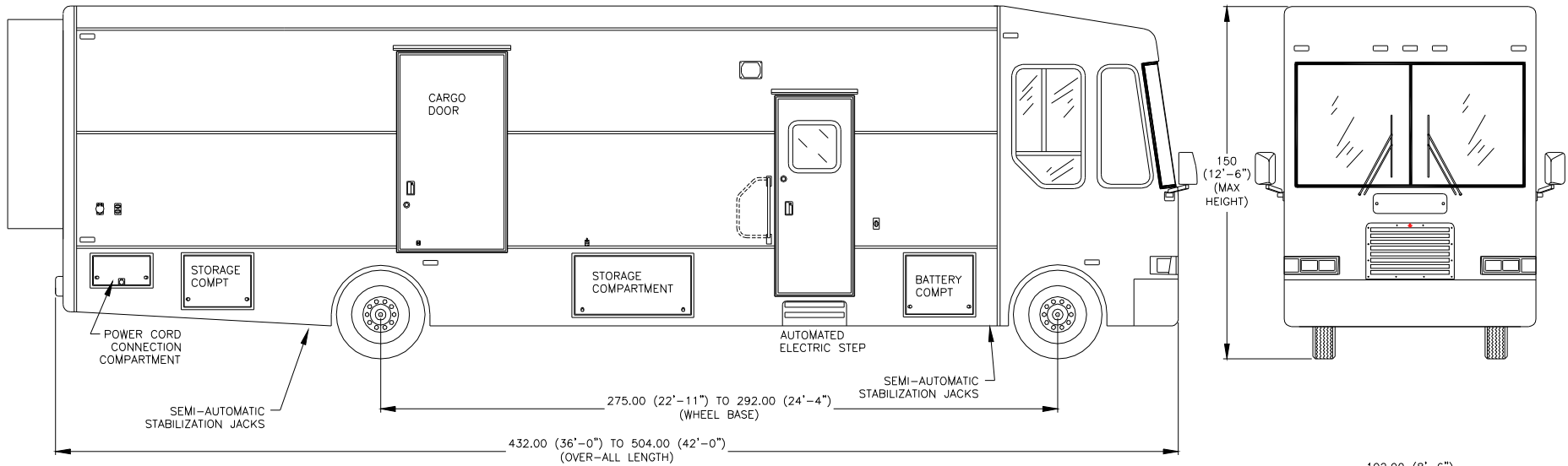
Care should be taken when selecting the site for the Mammography unit with relationship to occupied areas. The customer will be responsible for radiation site survey, permits, complying with regulations and additional site barriers/warnings.



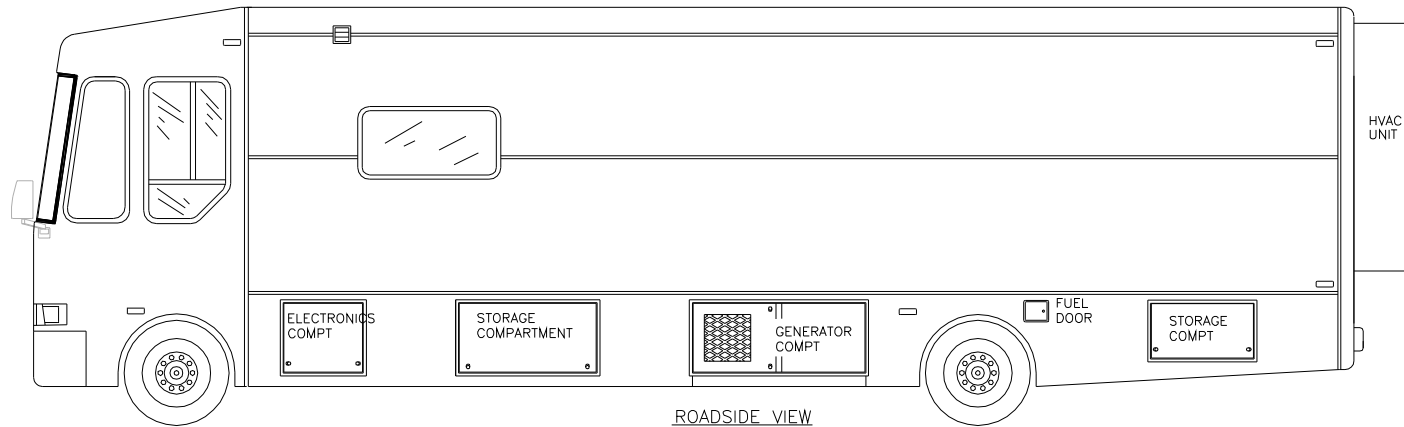
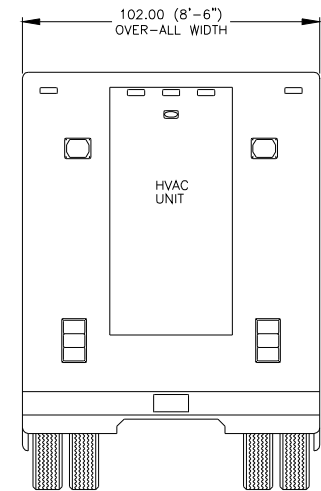
NOTE 1:
 ALL COACH DIMENSIONS ARE APPROXIMATE AND MAY VARY DUE TO CUSTOMER CONFIGURATION REQUEST

NOTE 2:
 THE RECOMMENDED PAD SIZE IS 540" (45') LONG x 258" (21'-6") WIDE. THIS PAD SIZE WILL ALLOW FOR SERVICE CLEARANCE AND PATIENT HANDLING.

NOTE 3:
 THE RECOMMENDED MINIMUM PAD SIZE IS 360" (30') LONG x 108" (9') WIDE. THIS PAD SIZE WILL NOT ALLOW FOR SERVICE CLEARANCE AND PATIENT HANDLING. THE CUSTOMER MUST ALLOW FOR THESE SERVICES.



CURBSIDE VIEW



ROADSIDE VIEW

NOTE 1:
 ALL COACH DIMENSIONS ARE
 APPROXIMATE AND MAY VARY DUE
 TO CUSTOMER CONFIGURATION REQUEST

NOTE 2:
 CONFIGURATION AND DOOR LOCATIONS
 MAY VARY DUE TO CUSTOMER REQUEST.
 SEE SALES DRAWING FOR ACTUAL CONFIGURATION.