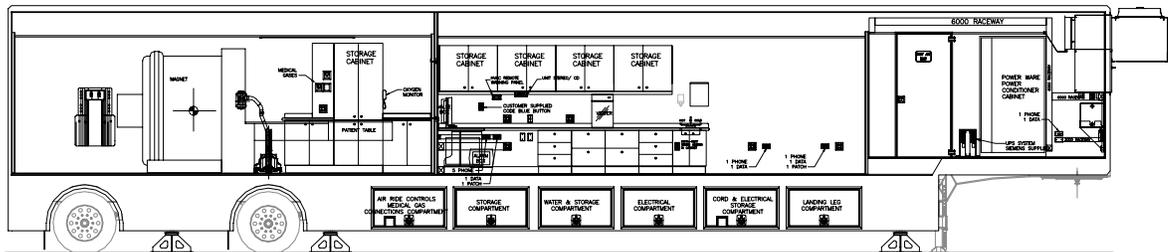




Site Planning Guide

SIEMENS AVANTO 1.0/1.5T Transportable MRI Systems 13'-6" H x 12' W x 60' L USA Unit



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List of Revisions

Revision

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Notice

In accordance with our policy of continued product improvement, Oshkosh Specialty Vehicles reserves the right to make changes in the equipment, design, specifications and materials of the product described herein. Any problems or questions related to the components or systems covered in this booklet may be directed to:

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Introduction

The purpose of this document is to provide the basic information needed for site planning. For specific information not contained in this document, please contact Oshkosh Specialty Vehicles.

The mobile unit requires sufficient room to be maneuvered and positioned for setup and takedown. The mobile unit has many storage compartments and service doors that require access during these procedures as well as during operation. The wheel chair lift, entry stair and optional platform require additional space on each side of the mobile self-propelled unit. Refer to the drawings provided for actual locations of doors, wheel chair lift, and stair sizes and locations.

Warnings & Safety Alert Conventions

The following terms define the various precautions and notices used in this manual:

NOTE: Whenever information exists that requires additional emphasis beyond the standard textual information, the term “NOTE” is used.



The term “IMPORTANT” is used whenever information exists that requires special attention to procedures to ensure proper operation of the equipment or to prevent its possible failure.



The term “CAUTION” is used whenever potential damage to equipment exists, requiring correct procedures / practices for prevention.



The term “WARNING” is used whenever potential personal injury or death situations exist, requiring correct procedures / practices for prevention.



The term “DANGER” is used whenever immediate hazards exist that could result in personal injury or death that cannot be eliminated by design safeguards.



This safety alert symbol indicates important safety messages in the manual. When you see this symbol, carefully read the message that follows and be alert to the possibility of personal injury or death.



Electrical, mechanical, pneumatic, and hydraulic safety devices have been installed on this vehicle to help protect against personal injury and / or damage to equipment. Under no circumstances should any attempt be made to disconnect or in any way render any of these devices inoperative.

If a malfunction of any safety device is discovered to exist, DO NOT operate the vehicle, but immediately notify appropriate maintenance personnel.

Oshkosh Specialty vehicles shall have no liability with respect to: REPAIRS IMPROPERLY PERFORMED OR REPLACEMENTS IMPROPERLY INSTALLED (or) USE OF REPLACEMENT PARTS OR ACCESSORIES NOT CONFORMING TO Oshkosh SPECIALTY VEHICLE’S SPECIFICATIONS, WHICH ADVERSELY AFFECT PERFORMANCE OR DURABILITY (or) ALTERATIONS OR MODIFICATIONS NOT RECOMMENDED OR APPROVED IN WRITING BY Oshkosh SPECIALTY VEHICLES (or) FOR EQUIPMENT DAMAGE OR PERSONAL INJURY OR DEATH AS A RESULT OF RENDERING ANY SAFETY DEVICE INOPERABLE.



Certain inherent risks are associated with heavy trailers due to the nature of their use. Personnel working in the area of these trailers are subject to certain hazards that cannot be met by mechanical means but only by the exercise of intelligence, care, and common sense. It is therefore essential for the owner of this equipment to have personnel involved in the use and operation of these trailers who are competent, careful, physically and mentally qualified, and trained in the safe operation of this equipment.



Support Pad Requirements

The following is a list of recommendations and requirements for a concrete support pad. However, due to varying site conditions, the actual pad design should be prepared by an appropriately licensed structural or architectural engineer.

Trailer Weight

The weight of the trailer should be considered in the design of the support and service pads. The overall weight of the trailer is approximately 67,400 lbs. The weight on the rear axles is approximately 42,340 lbs. The weight on the King Pin is approximately 25,060 lbs.

Recommended Support Pad

A full pad measuring 16'-4" x 52'-7", located as shown on [Figure 1: Plan View and Pad Layout](#) and [Figure 3: Left Side Elevation](#) as the crosshatching, is the recommended support pad.

Support Pad Depth

Recommendations for the width and length of the pad are given above. Based upon the existing site conditions, the depth should be determined by a local contractor. It is recommended that non-ferrous reinforcement materials be used for pad reinforcement. Siemens must approve plans for pad construction.

Support Pad Levelness

The support pad must be level to ensure proper operation of the MRI system. The pad must not exceed .125" deviation in 10'-0". If the minimum support pads are selected, rather than the recommended single pad, they must also meet this specification.

Recommended Service Pad

A service pad is recommended to provide adequate service access. The recommended size of the pad is 25' x 67' 6-1/2". See [Figure 1: Plan View and Pad Layout](#), for details.

Vehicle Access

A firm, level surface is required around the mobile unit to provide access to the tractor/trailer, aid with patient handling, servicing the unit, and delivering of cryogens.

Steel Reinforced Concrete Pad

The maximum amount of reinforcing bar shall not exceed 4 lbs per square foot.

Recommended Attachment to Facility

An inflatable air bag or soft seal is recommended at the point of connection from the unit to the facility. Fixed or solid connections may hinder imaging quality. Contact AKSV or the local Siemens representative prior to construction if the proposed connection varies from the recommended.

Exclusion Zone

An area of 5'-0" x 5'-0", located directly below the magnet vent should be fenced off to prevent injury in the event of magnet quenches. The helium gas must be allowed to vent, unrestricted, to a non-accessible area, allowing the helium gas to dissipate.



Vehicle Movement

The MRI is very sensitive to vibration and moving metal. Consequently, all vehicle traffic shall be kept as far away as possible from the pad. Moving ferrous materials having the listed masses should be limited to areas as described in the Siemens site planning publication. Contact Siemens to obtain the latest version.

Vibration / Foundation Design

Please contact Siemens Medical Systems for the latest system specific vibration requirements.



Customer Power Requirements



It is the operators' responsibility to verify that the shore power receptacle is of the same type and voltage as the connection that is supplied by Oshkosh Specialty Vehicles. Failure to do this can result in injury or death to the operator of the mobile unit as well as irreparable damage to the mobile unit.



The standard connector for the unit is a Russellstoll DS2504MP000/DF2033 480V 200A Plug. If an existing site currently implements a different connector or connector configuration, please contact Oshkosh Specialty Vehicles in order to arrange for a compatible power connector before the unit leaves the facility.

Lockout/Tagout

A Lockout/Tagout provision in accordance with OSHA Standard 1910.147 is required. The facility shore power disconnect device must be located within 40'- 0" of the unit and must provide for an effective lockout/tagout to facilitate safe service and maintenance of the unit.

Electrical Service

A single electrical power source is required for operation of the MRI system.

480 Volt A.C., 3 Phase, 125 KVA, fused at 200 Amps

Configuration

The Power Cable is a 3/0, 4 conductor, Type W. The configuration is (3) three phase, four wire, delta connection, with ground.

Frequency

60 Hz \pm 0.5%

Phase Balance

The phase balance is + 2% maximum phase-to-phase line voltage difference lowest phase.

Maximum voltage variation

The maximum voltage variation is \pm 5% from nominal steady state (under the worst case conditions of line voltage)

Connector Type

The unit is supplied with a 50 foot cable and male connector. The connector is a Russellstoll 200 Amp plug # DS2504MP000/DF2033.

Customer Facility

The facility must have the matching receptacle as specified in [Figure 5: Russellstoll Service Outlet](#) and [Figure 6: Russellstoll Chart](#). The receptacle is a Russellstoll DF2504FRAB0 female connector.



Voltage Surges

Transient voltage variations caused by external loads must not:

- Exceed + 5%
- Exceed five cycles duration
- Occur more than ten times an hour.

Power Source Monitoring (Facility Only)

NOTE: Perform a power audit first.

A power analyzer should be used to check the proposed Mobile MRI Series facility site power for average line voltage, surges, sags, reclosures, impulses, frequency and microcuts. A period that includes two weekends should be used to simulate several days of normal use. Analysis of the data and site history of any previous power problems with other X-ray systems or computer installations should be reviewed with your power and ground representative. Verify "brown-out" (low voltage) conditions, which may occur during summer months, will not exceed the allowable range.

Some analyzer models that are suitable for power monitoring are:

- Dranetz Model 658
- Dranetz Model 656A
- BMI 3630
- RPM

Ground Conductor

An insulated ground conductor sized in accordance with National, State, and local codes shall be installed between the facility vault and the MRI System ground bus location in the power distribution unit.

Magnetic Shielding

The MRI unit is equipped with magnetic shielding. The exclusion zone five (5) gauss is restricted to within 6" of the trailer exterior. Appropriate warning signs are permanently attached to the scan room doors.

R.F. Shielding

The R.F. shield is included with the MRI system and will provide minimum level of attenuation: 10 Mhz – 100 Mhz, 85 db (plane wave, electric field, magnetic wave).



Mobile Grounding Requirements

Special Grounding Note:

The unit must have an earth driven ground rod within five (5) feet of the hospitable power receptacle. A grounding cable of a minimum 4 GA must be connected between the grounding rod and the grounding pin of the hospitable power receptacle. A separate grounding conductor must still be run with the phase conductors to the source of power from the grounding pin of the hospitable power receptacle in accordance with NEC Article 250-24.

NOTE: For the associated drawing please refer to the following chart for grounding requirements.



Telephone and Data Service Requirements

Telephone Service

The mobile unit is supplied with five (5) telephone connections. The connector type that is used is a Hubbell model PH-6595 (inlet). Three (3) Hubbell all weather telephone connections, model PH-6599 are provided with the unit. The cables measure 50'-0" in length.

The customer is required to purchase and install two (2) Hubbell all weather telephone connections, model PH-6599 for use at the site.

Data Service

The mobile unit is supplied with five (5) data line connections that utilize RJ-45 outlets.

The customer is required to purchase the data connection cables for use with the data line connections. The data line connections require a 50'-0" CAT-5E cable with RJ-45 connections.



Water and Chiller Requirements

IMPORTANT

During winter conditions, provisions must be made to ensure that water lines do not freeze because of weather conditions.

Humidifier Water Fill

The unit contains a water storage tank for the humidifier. This tank is located in the equipment room and must always contain water to insure the specified humidity level remains constant. There are two options for filling the tank:

A $\frac{3}{4}$ " I.P.S. male threaded hose connection is located under the lower compartment water tank area.

A fill port is located on the humidifier tank in the equipment room for manual fill capability.

Potable Water Supply Requirements (option)

A cold water supply line is required, with a flow rate of 5 gallons per minute, 45-60 psi and a maximum temperature of 70 degrees Fahrenheit. The unit will be supplied with a $\frac{3}{4}$ " diameter, 20' long hose terminated with a $\frac{3}{4}$ " I.P.S. male threaded hose connector. The facility is to provide a $\frac{3}{4}$ " female connector to connect to the units 20' long hose.

Waste Water Connections (sink option)

A $1\frac{1}{2}$ " IPS male connection is required to sink wastewater.

Any pipes and drains within 20'-0" of the magnet isocenter should be of non-ferrous materials such as PVC, copper, or brass. All plumbing must comply with applicable codes.

The unit is supplied with a 20' long $1\frac{1}{2}$ " diameter drain hose terminated with a $1\frac{1}{2}$ " male threaded connector for sanitary wastewater drainage. The facility must provide means of sanitary wastewater drainage from the system that comply with locally applicable codes.

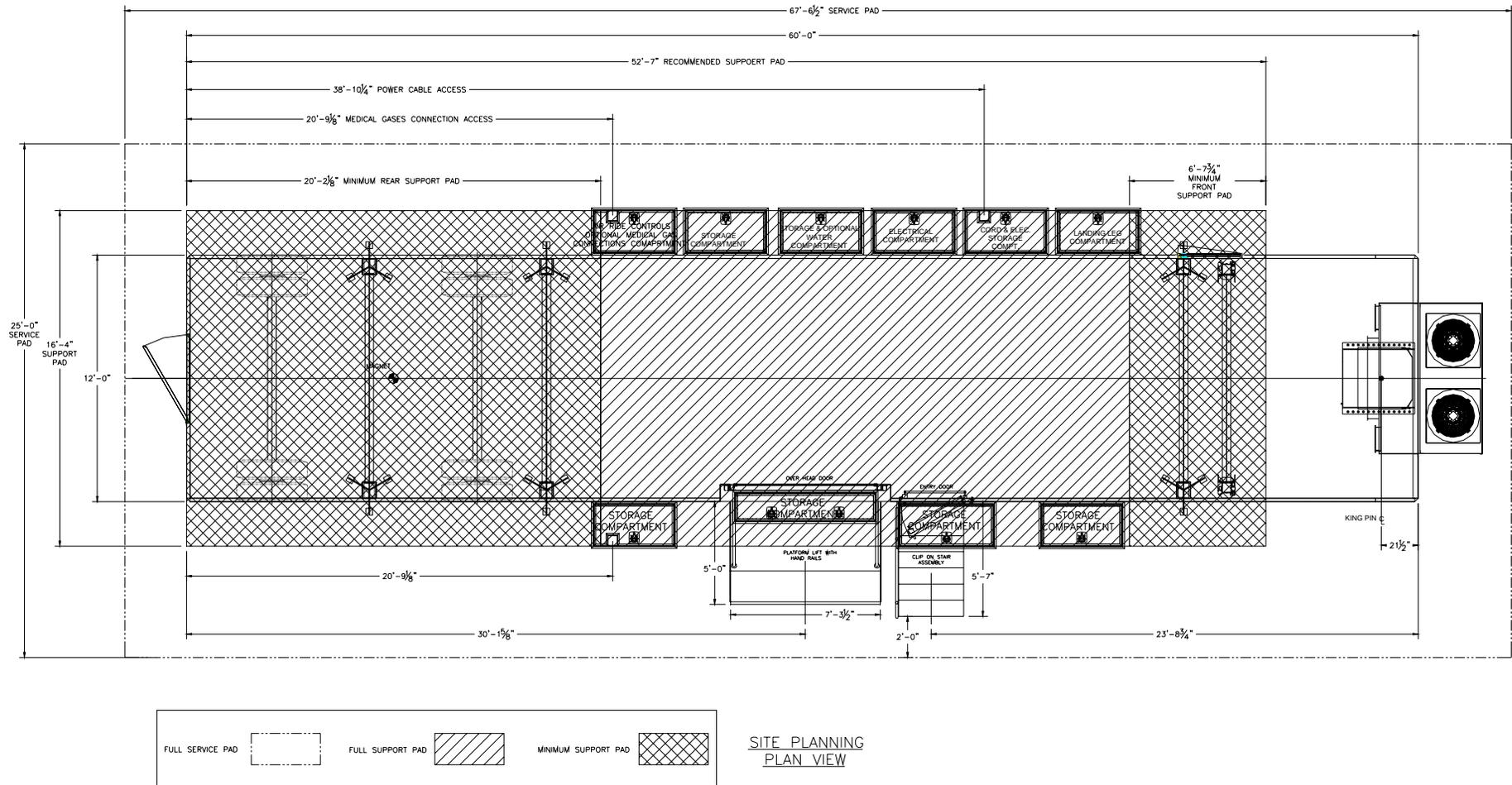
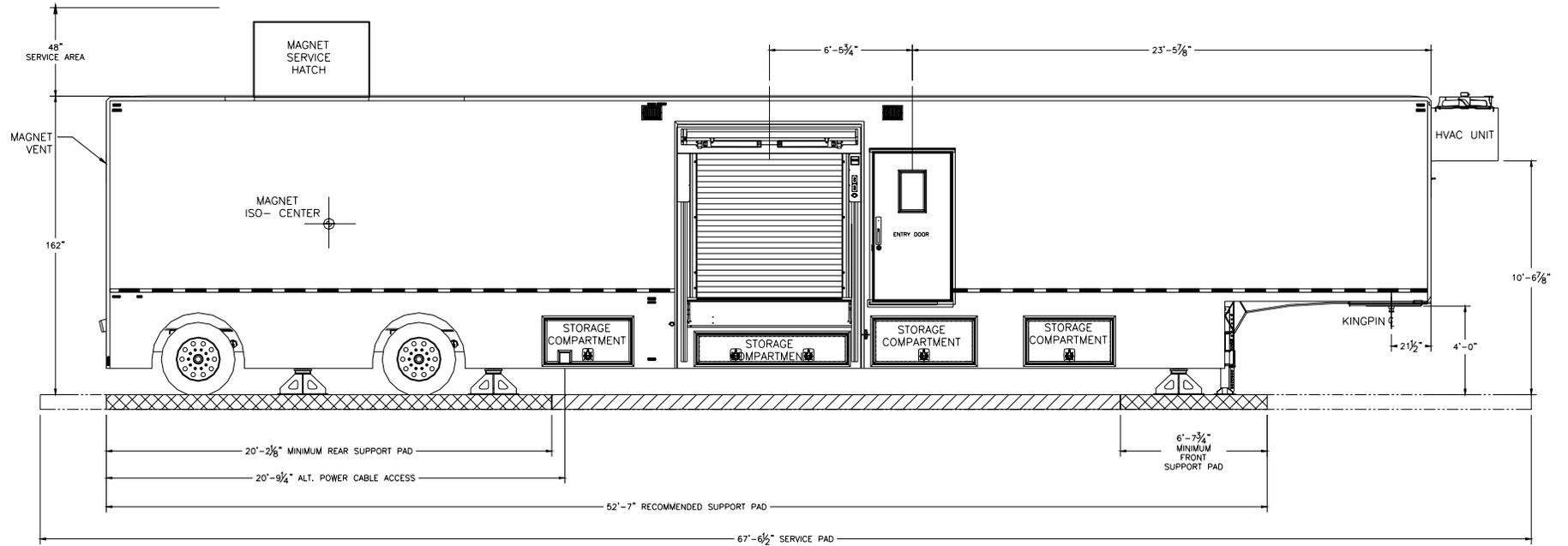


Figure 1: Plan View and Pad Layout



RIGHT SIDE ELEVATION VIEW

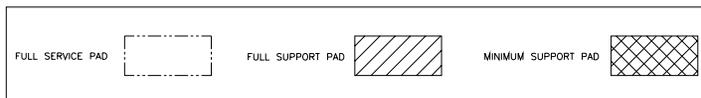
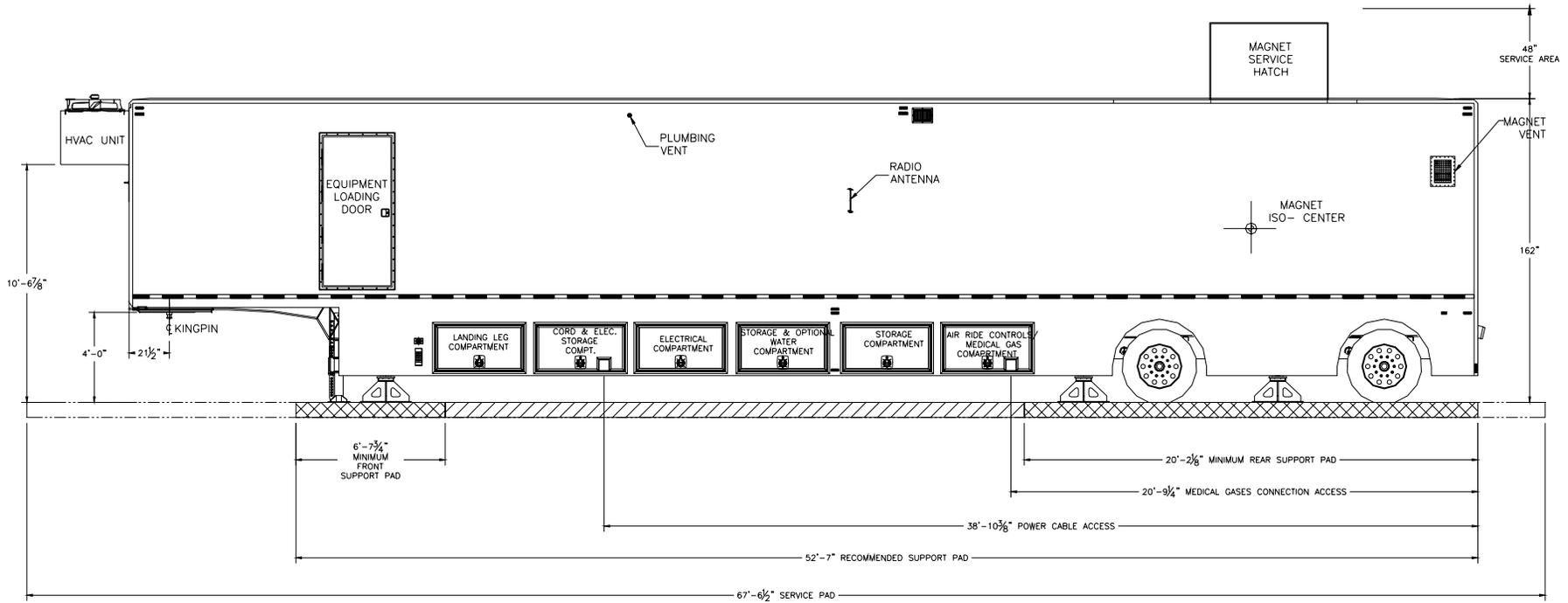


Figure 2: Right Side Elevation



LEFT SIDE ELEVATION VIEW

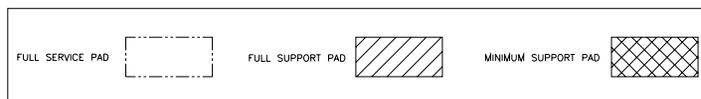
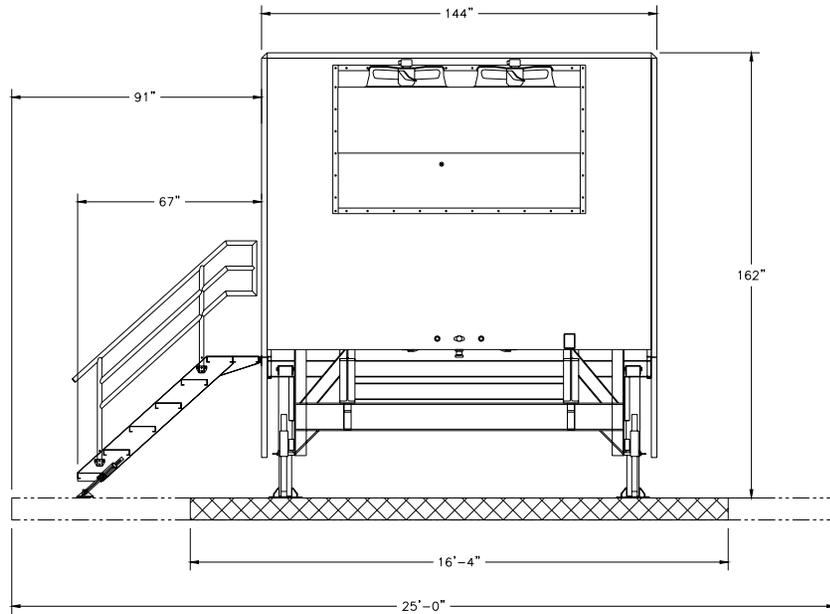
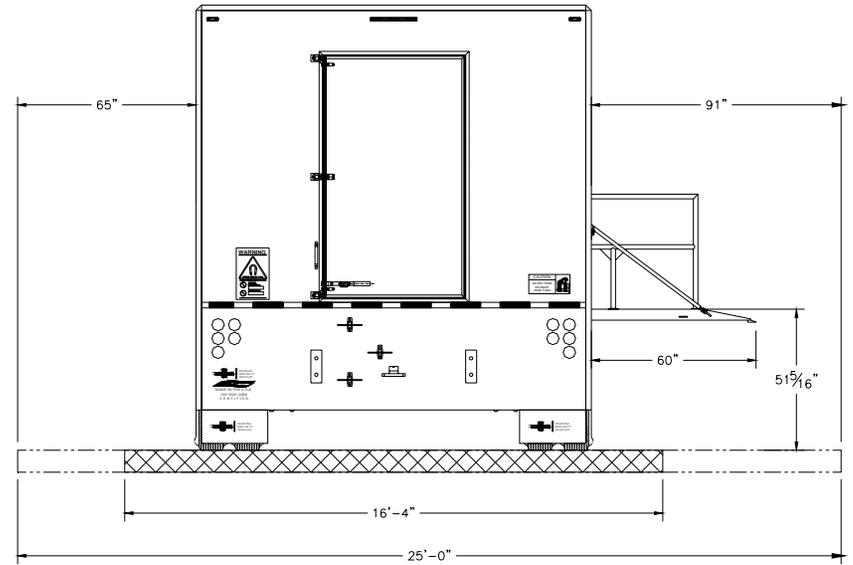


Figure 3: Left Side Elevation



FRONT WALL ELEVATION



REAR WALL ELEVATION

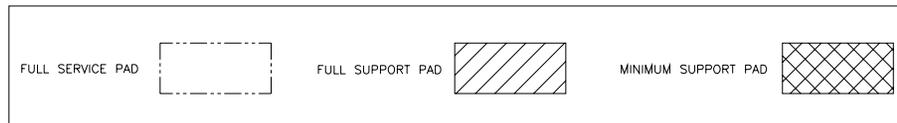


Figure 4: Stair / Lift / Wall Elevation

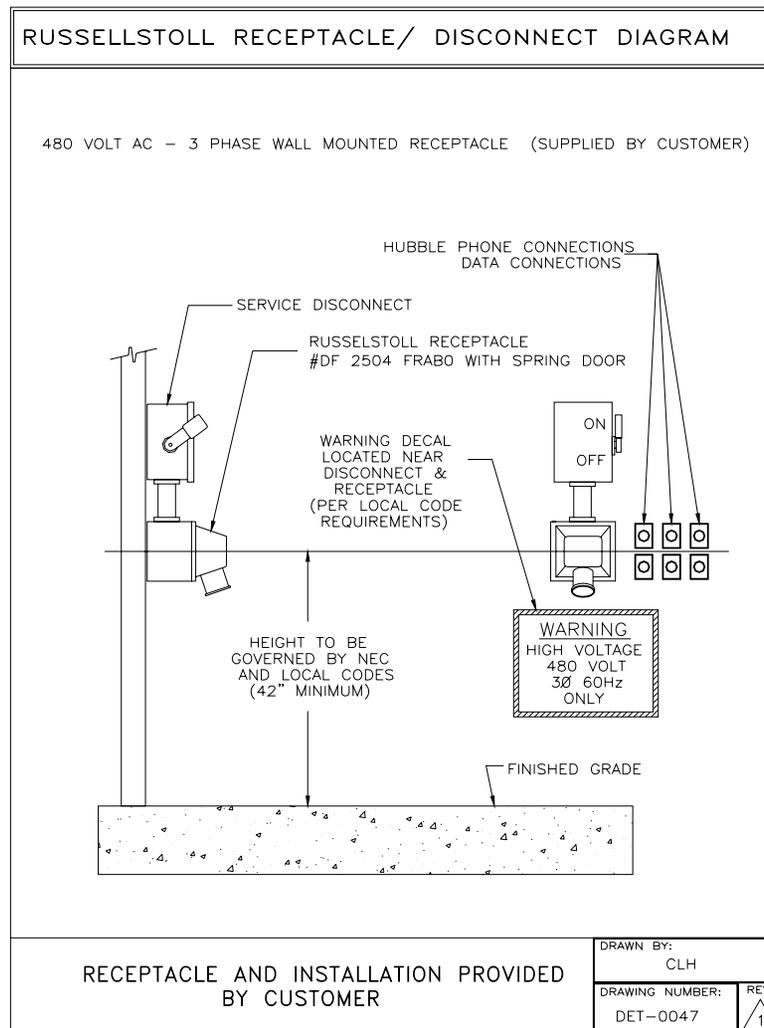


Figure 5: Russellstoll Service Outlet

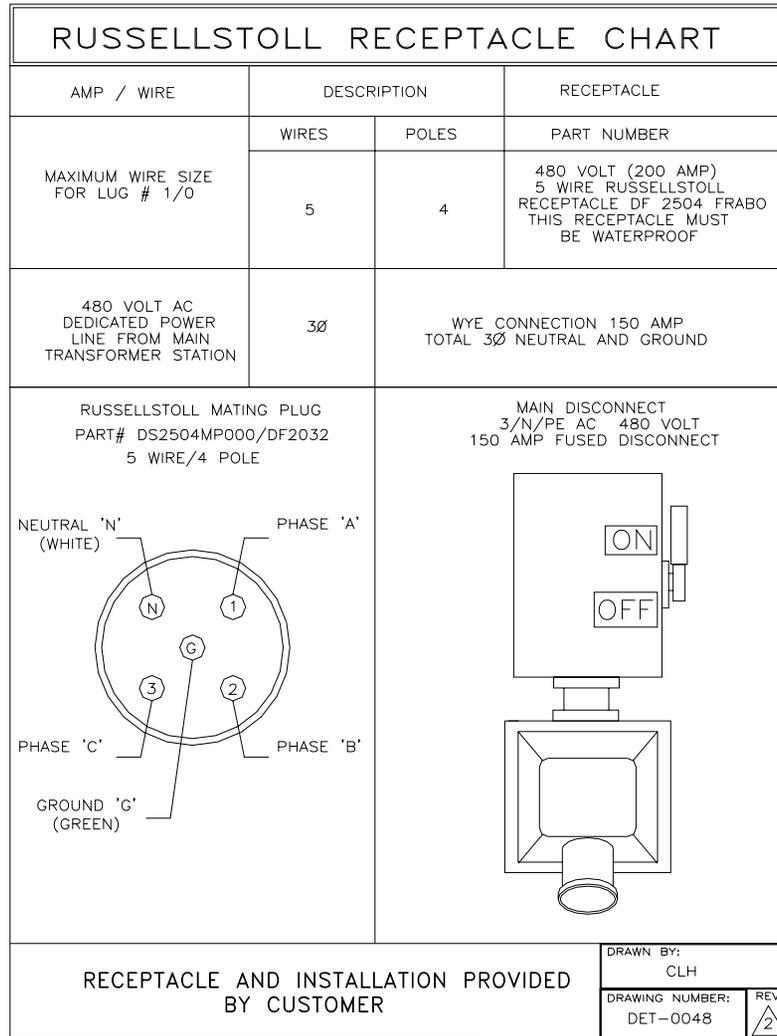
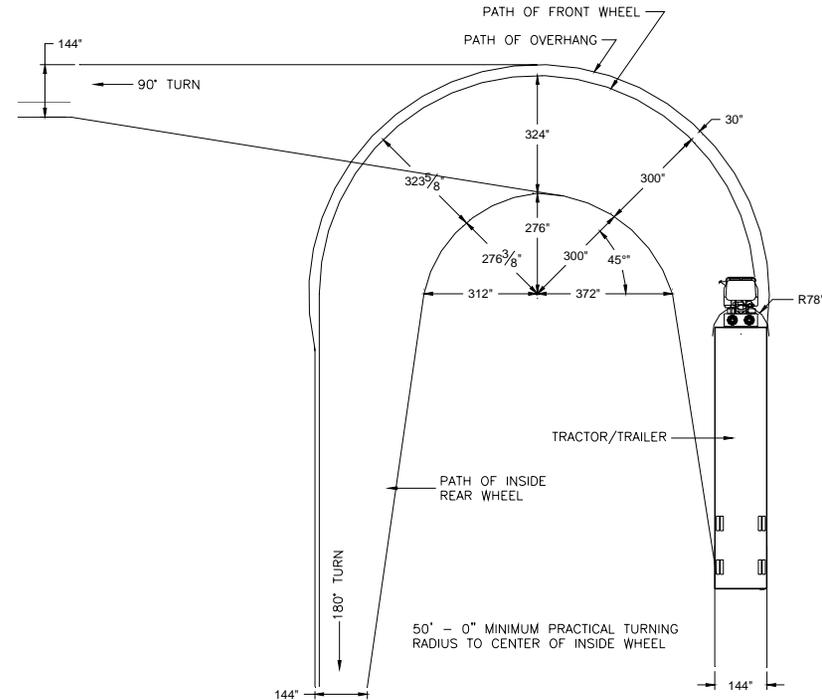


Figure 6: Russellstoll Chart



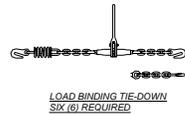
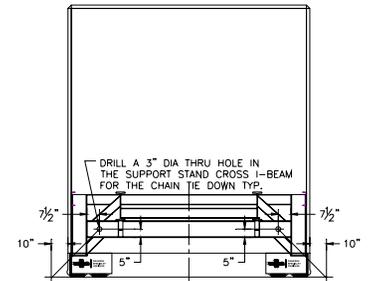
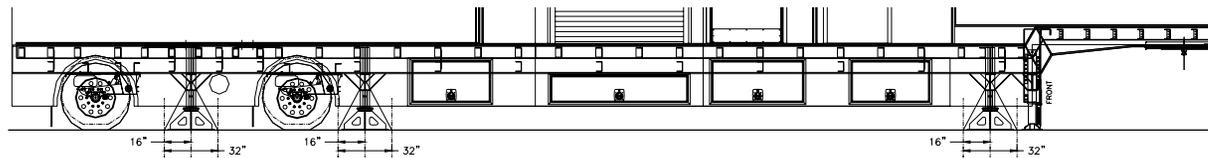
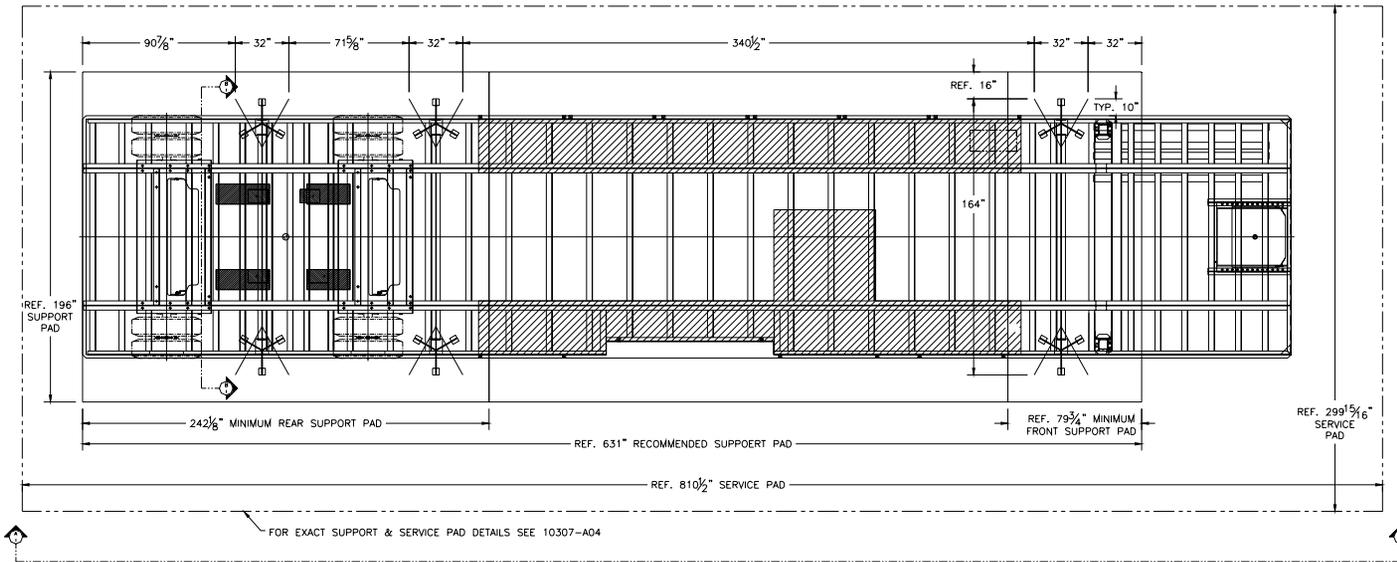
A minimum "A" dimension of 110" is required from rearmost projection to centerline of tandem suspension. This provides swing clearance for generator set which is mounted on the front of the trailer. Hospital is responsible to ensure the access route is clear of obstructions when the trailer is scheduled to arrive or depart. The 50' minimum outside turning radius shown here has been calculated using an international harvester (Navistar) tractor Model COF-9670 with a 161" wheelbase. Turning radius will vary with towing tractor. Customer must confirm the turning radius on their tractor and prepare each site with adequate space to accommodate it.



NOTE:
HOSPITAL IS RESPONSIBLE TO ENSURE THE ACCESS ROUTE IS CLEAR OF OBSTRUCTIONS WHEN TRAILER IS SCHEDULE TO ARRIVE OR DEPART.

NOTE:
THIS DRAWING IS A TYPICAL CONFIGURATION THE ACTUAL TURNING RADIUS WILL DEPEND ON TYPE OF TRACTOR, TRACTOR WHEEL BASE, FIFTH WHEEL PLACEMENT, ETC.

Figure 7: Turning Requirements



GENERAL NOTES:

1. THE CUSTOMER MUST PROVIDE 12 PAD ANCHORS WITH EYE ENDS OF 2"-3" OPENING TO BE INSTALLED BELOW THE SURFACE OF THE SUPPORT PAD.
2. THE CUSTOMER MUST CONTRACT QUALIFIED PERSONNEL FOR THE PROPER ANCHOR DESIGN AND LOAD CALCULATIONS FOR THE SPECIFIC SITE.
3. THE TRAILER WEIGHT IS 80,000 LBS. (50,000 LBS ON THE REAR AXLES & 30,000 LBS ON THE KING PIN).

Figure 8: Tie Down Assembly (optional)