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**Calutech Mobile Solutions, Inc.
3550 179th Street, Unit-C
Hammond, Indiana 46323**



SITE PLANNING GUIDE

PHILIPS MEDICAL SYSTEMS MOBILE 1.5T MRI 48' x 8'-6" TRAILER

**Document No. 60-90005
Revision B
11 December 2006**

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REVISION HISTORY

Revision #	Description	Date
A	Initial Release	11-25-02
B	Updated	12-11-06

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[Facility Power Requirements](#)

The following describes the electrical service required to power the entire mobile unit which includes all support equipment and the medical system installed. The power configuration, quality and connector type are among the items listed. These items are required to be in place for the trailer to function properly.

Facility Electrical Service

- ✧ 480 Volt A.C., 3 Phase, fused at 150 Amps.
- ✧ Three phase wye connection, and ground.
- ✧ 60Hz \pm 0.5%
- ✧ Regulation: 4% maximum at system maximum power demand
- ✧ Phase balance: Difference between the highest phase line to line voltage and the lowest phase line to line voltage must not exceed 2%
- ✧ Daily voltage variation: 10% from nominal under worst case line and load regulation.
- ✧ Voltage transients: Phase to phase voltages must be within 2% of the lowest phase to phase voltage.

Trailer Plug and Facility Receptacle

- ✧ The **trailer** is supplied with a 55 foot multi-conductor cable terminated with a **Russellstoll 200 amp male plug, part #DS2504MP**.
- ✧ Take notice in illustration 4 for the underbelly compartment from which the cable exits. The end of the cable on the trailer is permanently connected (hard wired). The position of the facility receptacle must be within the useable length of the cord.
- ✧ The **facility** is required to provide a matching female receptacle. A typical receptacle configuration is a **Russellstoll part #DF2504FRAB**.
- ✧ Illustrations 1 and 2 provide further information for the facility required receptacle.

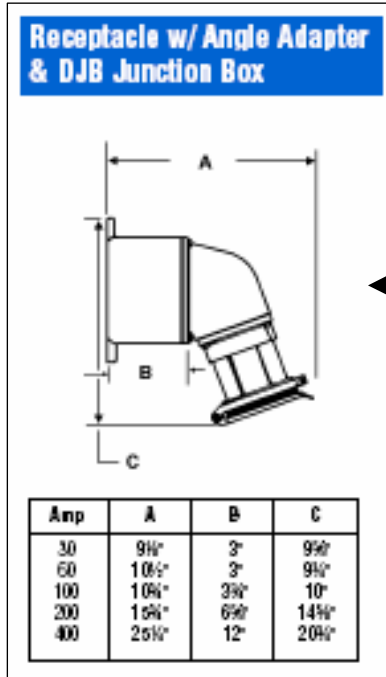
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- ✧ An insulated ground conductor sized in accordance with the manufacturer requirements for a Philips Intera 1.5T or in compliance with NEC 250.122 shall be installed between the facility vault and the MRI System ground bus location in the power distribution unit.

NOTES:

- ✧ The standard connector for the trailer is the Russellstoll listed above. The next most common receptacle is manufactured by Crouse-Hinds. A Russellstoll will be provided unless directed otherwise. The facility should confirm which to plan for.
- ✧ If power is lost to the unit, it is imperative that the generator be started to maintain environmental controls. The system employs a water filled chiller, that if subject to freezing conditions, the system can sustain damage. Diesel fuel levels should also be checked regularly.

NOTES:



Russelstoll Catalog Illustration

A Safety Disconnect Switch is also required at the receptacle location fused at 150 Amps.

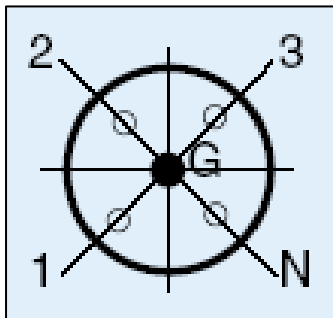
The voltage must be clearly marked as:
480 Volts, 3 Phase, 60Hz ONLY

← Russellstoll DF2504FRAB

The installation shall meet the National Electrical Code and local codes.

Note the location where the power cord exits the trailer and the cord's length when locating the Safety Disconnect and Receptacle.

Pole Number	Corresponding Phase	Color Designation
1	A	Brown
2	B	Orange
3	C	Yellow
N		White
G		Green



Russelstoll Catalog Illustration

Warning: The facility service must be phased to match the trailer. This must be verified prior to connecting the shore power cable. An audible and visual alarm will indicate improper phasing.

Illustration 1: Russellstoll Receptacle

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Mobile Grounding Specification

- ✧ Also see Illustration 3 related to the grounding specification.
- ✧ All work is to be done in accordance with local and national electrical codes.
- ✧ Information shown here is only a recommendation and must be verified to local and national codes.
- ✧ Ground wires inside enclosures are to be taped green for the entire visual length for identification.
- ✧ If a separate or auxiliary transformer is used in the system, a bonding jumper between the neutral conductor and the equipment grounding conductor must be used to ensure no voltage potential between neutral and ground.

Grounding

The ground for the system shall originate at the system power source (transformer) or first access point of power into the facility, and be continuous to the MR system main disconnect panel. 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 non-insulated 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 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” if a “WYE” transformer is being used, 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.

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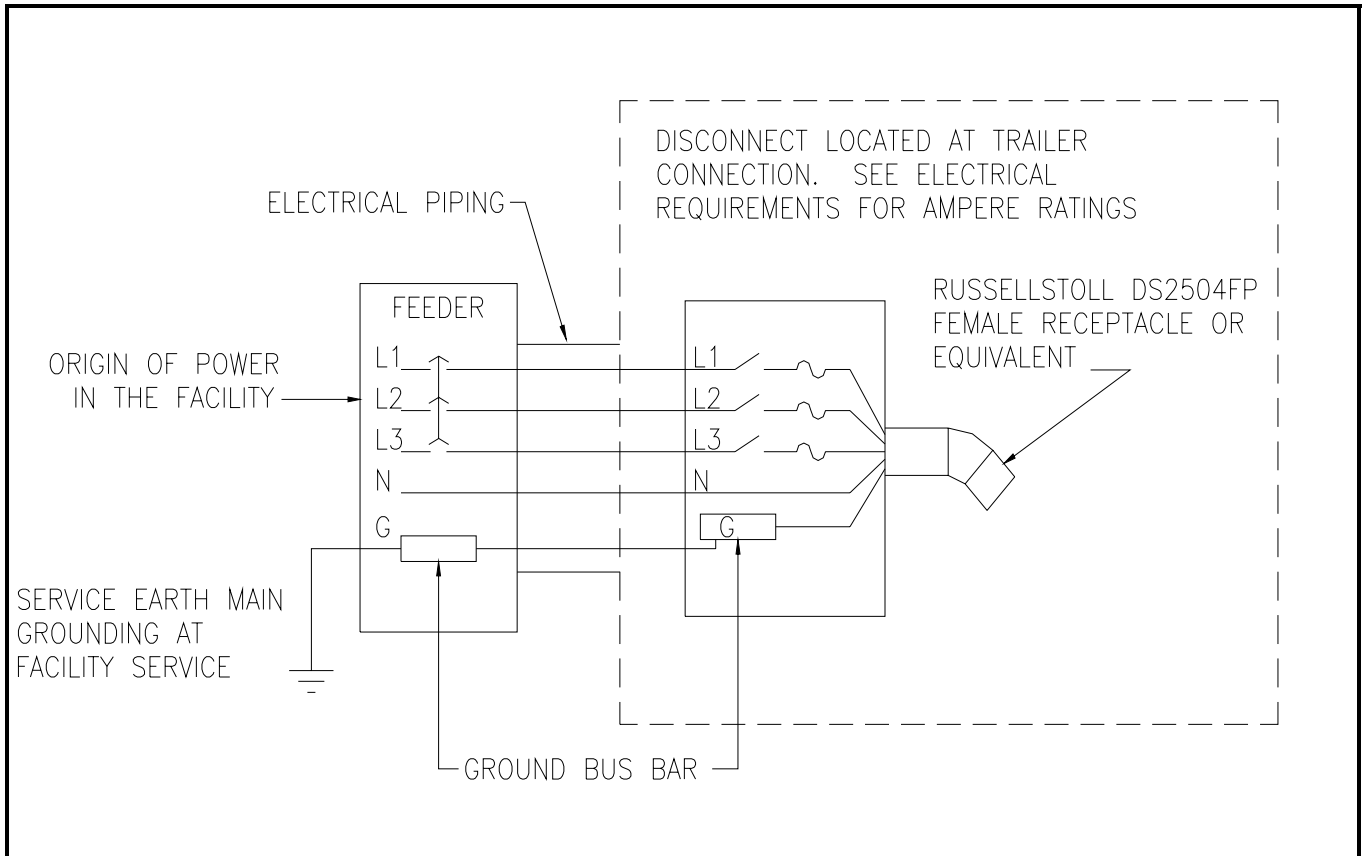


Illustration 2: Mobile Grounding Requirements Diagram

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Telephone and Data Connections

Telephone Service

- ✧ The trailer includes three Hubbell PH-6595 telephone connections in an underbelly compartment.
- ✧ Each connection is color coded to easily identify the corresponding outlets within the interior of the trailer.
- ✧ Calutech Mobile Solutions provides two Hubbell PH-6599 50 foot telephone-connecting cables with each trailer.
- ✧ The facility is required to provide the matching Hubbell connector.

Data Service

- ✧ The trailer includes three RJ-45 data line connections in an underbelly compartment.
- ✧ Each connection is labeled to easily identify the corresponding outlets within the interior of the trailer.
- ✧ No cables are provided for connection to the facility.

NOTE:

Telephone and Data Services may vary based on customer requirements. Confirm exact connections on the trailer.

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Water Supply and Waste

Humidifier Water Fill

- ✧ The trailer requires a water supply to serve the humidifier. Humidification must be maintained within specified limits. The on-board tank can be filled through the use of a ¾" male garden hose type connection located under the front wall of the trailer or it can be filled manually with a portable container.
- ✧ The trailer plumbing is also configured (through the proper control of valves) to allow for facility water to directly and continuously feed the humidifier.

On-board Sink Option

- ✧ Some trailers may be equipped with an on-board sink.
- ✧ A cold water only supply line is required with a flow rate of 5 gallons per minute at 45-60 psi.
- ✧ The trailer will be supplied with a ¾" female threaded connection for water supply. The facility is required to provide means to serve this connection.
- ✧ Freeze protection of the incoming water line should be considered if applicable.
- ✧ For waste water removal, a 1½" male threaded connection is provided. The facility is required to provide means to serve this connection.

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Facility Support Pads

See the following recommendations and requirements for the trailer concrete support pad. Note: These are only recommendations. Actual design shall be done by others.

Support Pads – dimensions and specifications

- ✧ Also see Illustrations 4 and 5 for information related to support pads.
- ✧ The minimum requirements are two concrete pads; one at the landing legs equaling 10' x 4', the other at the rear axles and support stands equaling 10' x 15'. These two pads are spaced apart as defined in Illustration 4.
- ✧ A single pad equaling 10' x 41'-8" can be provided in lieu of two separate pads.
- ✧ Additional concrete area extending out from the minimum pads is strongly recommended to provide a suitable surface for the patient lift and stair assembly. Service access to the generator, air-conditioners, rear door and underbelly compartments is also an important consideration. A suggest size of 21' x 57' for this purpose is shown in Illustration 4.
- ✧ The depth of the pads may vary based on local conditions and cannot be specified in this document. The weight of the trailer must be considered. Total weight of the trailer only should not exceed 62,000 lbs. Weight on the two trailer axles should not exceed 40,000 lbs. Contact Calutech Mobile Solutions for any questions related to this item or any of the pads described above.
- ✧ The Medical System and some trailer functions require a level pad. The most critical of all the pads listed are at the front landing legs and rear axles including jack stands. These pads must be level to no greater than 1/8" variation in 10' of length. Consideration should also be given to the area around the stairs and patient lift for proper patient handling. If the area where the stair rests on the pad is un-level, the stair treads will not be horizontal. Also, the leading edge of the lift should rest on the ground at the same time as the back edge or before to create a smooth transition.

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Support Pads – ferromagnetic objects

- ✧ The Philips Medical MRI System has specific regulations regarding mass of ferromagnetic materials and their position relative to the magnet. This includes reinforcement of the concrete pads. Consult the Philips Medical MRI planning documentation or contact a representative for assistance related to this issue.
- ✧ The surrounding area also must be evaluated for fixed and moving ferromagnetic objects. Contact a Philips Medical representative for assistance related to this item.

[Trailer Delivery and Attachment](#)

Trailer Transport and Delivery

- ✧ Transport and delivery of the trailer to the site are also considerations. The tractor selected must be sized accordingly based on total weight (62,000 lbs) of the trailer and kingpin setback dimension. The minimum dimension from the kingpin to the rearmost portion of the tractor cab is 92”.
- ✧ The trailer and tractor have minimum turning area requirements. This is dependant on the wheelbase of the tractor selected and the tractor to trailer wheelbase. Typical tractor and trailer combinations may have greater than a 100 foot turning diameter. The customer or transport company must evaluate the ability of each site to accept the delivery of the trailer in these regards.

Attachment to Facility

- ✧ The structure which joins the facility to the trailer can provide a comfortable transition for the staff and patients. These structures can simply be a covered walkway or a more significant structure.
- ✧ One important consideration is that transmitted vibration can cause imaging problems with the medical system. Typically for the final connection an air inflated seal is utilized.

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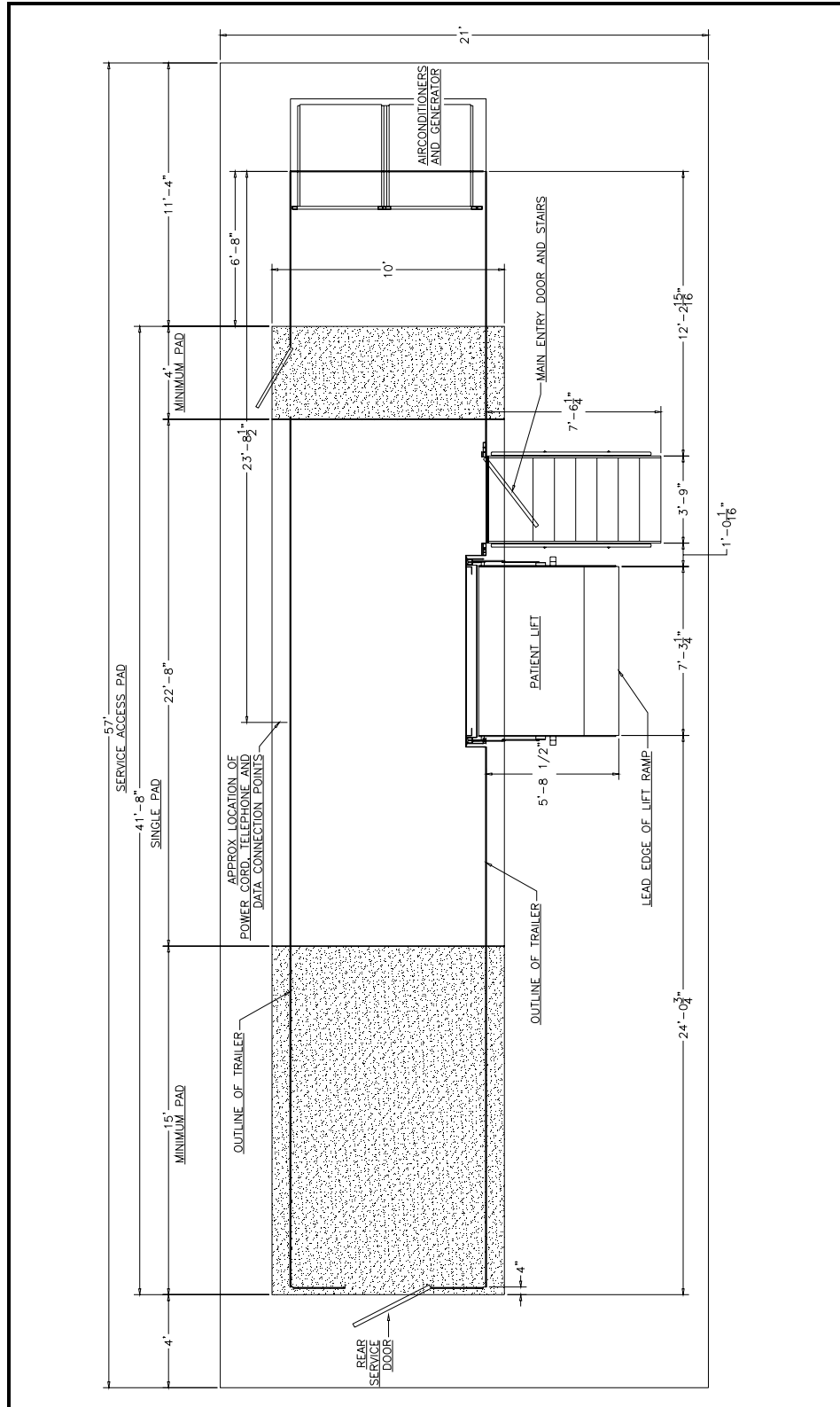


Illustration 3: Plan View Trailer and Pad Layout

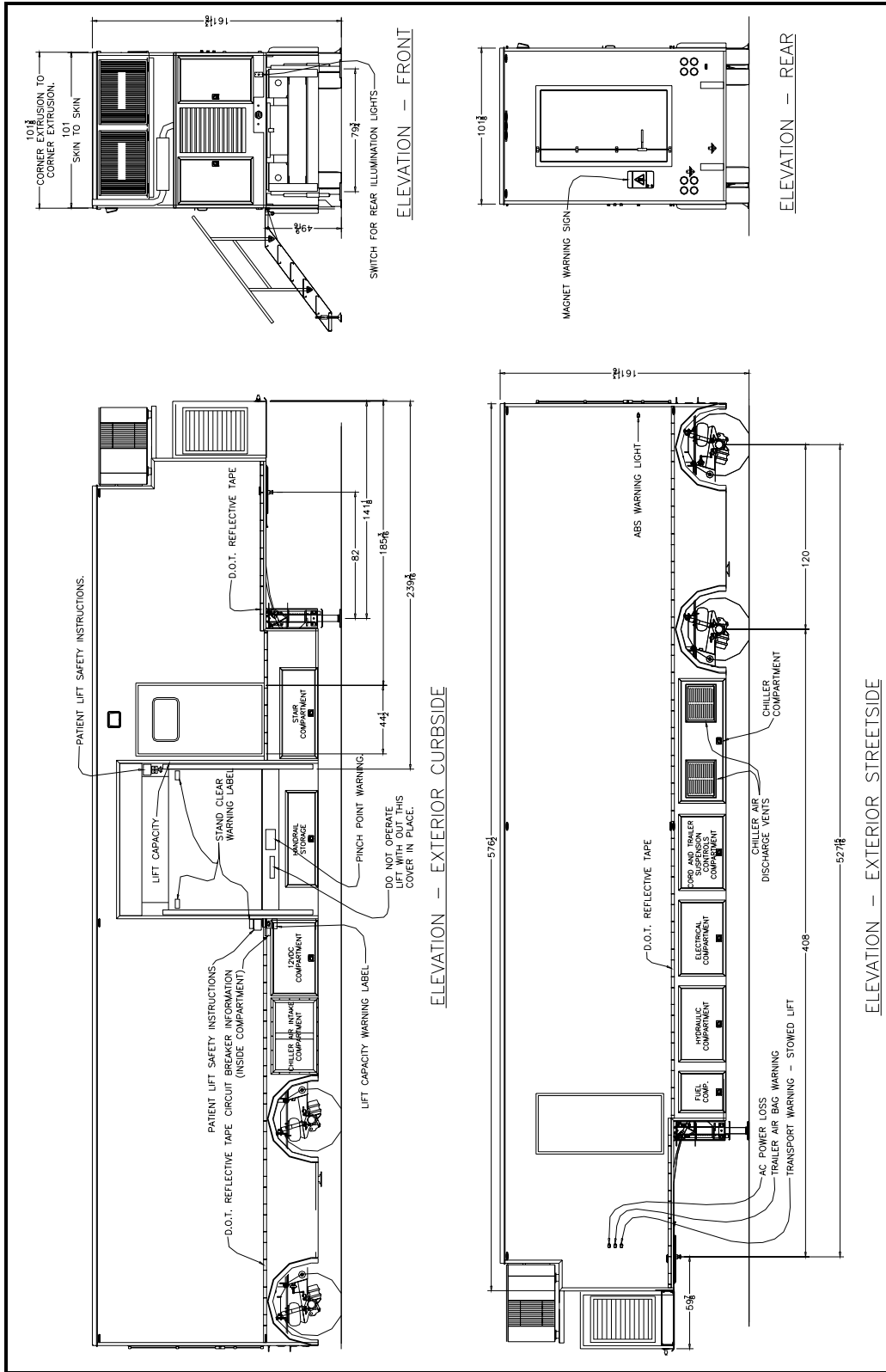


Illustration 4: Trailer Elevations