

DISCLAIMER

GENERAL SPECIFICATIONS

- GE is not responsible for the installation of developers and associated equipment, lighting, cassette trays and protective screens or derivatives not mentioned in the order.
- The final study contains recommendations for the location of GE equipment and associated devices, electrical wiring and room arrangements. When preparing the study, every effort has been made to consider every aspect of the actual equipment expected to be installed.
- The layout of the equipment offered by GE, the dimensions given for the premises, the details provided for the pre-installation work and electrical power supply are given according to the information noted during on-site study and the wishes expressed by the customer.
- The room dimensions used to create the equipment layout may originate from a previous layout and may not be accurate as they may not have been verified on site. GE cannot take any responsibility for errors due to lack of information.
- Dimensions apply to finished surfaces of the room.
- Actual configuration may differ from options presented in some typical views or tables.
- If this set of final drawings has been approved by the customer, any subsequent modification of the site must be subject to further investigation by GE about the feasibility of installing the equipment. Any reservations must be noted.
- The equipment layout indicates the placement and interconnection of the indicated equipment components. There may be local requirements that could impact the placement of these components. It remains the customer's responsibility to ensure that the site and final equipment placement complies with all applicable local requirements.
- All work required to install GE equipment must be carried out in compliance with the building regulations and the safety standards of legal force in the country concerned.
- These drawings are not to be used for actual construction purposes. The company cannot take responsibility for any damage resulting therefrom.

CUSTOMER RESPONSIBILITIES

- It is the responsibility of the customer to prepare the site in accordance with the specifications stated in the final study. A detailed site readiness checklist is provided by GE. It is the responsibility of the customer to ensure all requirements are fulfilled and that the site conforms to all specifications defined in the checklist and final study. The GE Project Manager of Installation (PMI) will work in cooperation with the customer to follow up and ensure that actions in the checklist are complete, and if necessary, will aid in the rescheduling of the delivery and installation date.
- Prior to installation, a structural engineer of record must ensure that the floor and ceiling is designed in such a way that the loads of the installed system can be securely borne and transferred. The layout of additional structural elements, dimensioning and the selection of appropriate installation methods are the sole responsibility of the structural engineer. Execution of load bearing structures supporting equipment on the ceiling, floor or walls are the customer's responsibility.

RADIO-PROTECTION

- Suitable radiological protection must be determined by a qualified radiological physicist in conformation with local regulations. GE does not take responsibility for the specification or provision of radio-protection.

THE UNDERSIGNED, HEREBY CERTIFIES THAT I HAVE READ AND APPROVED THE PLANS IN THIS DOCUMENT.		
DATE	NAME	SIGNATURE

CUSTOMER SITE READINESS REQUIREMENTS

REQUIRED MANUALS FOR SYSTEM PRE-INSTALLATION

Description	Document Number*
Product specific Pre-installation Manual	Refer to cover page
*documents can be accessed in multiple languages at https://www.gehealthcare.com/support/manuals	

- A mandatory component of this drawing set is the GE HealthCare Pre-installation manual. Failure to reference the Pre-installation manual will result in incomplete documentation required for site design and preparation.
- The items on the GE HealthCare Site Readiness Checklist **DOC2949061** and Worksheet **DOC2949068** are REQUIRED to facilitate equipment delivery to the site. Equipment will not be delivered if these requirements are not satisfied.
 - Any deviation from these drawings must be communicated in writing to and reviewed by your local GE HealthCare installation project manager prior to making changes.
 - Make arrangements for any rigging, special handling, or facility modifications that must be made to deliver the equipment to the installation site. If desired, your local GE HealthCare installation project manager can supply a reference list of rigging contractors.
 - New construction requires the following;
 1. Secure area for equipment,
 2. Power for drills and other test equipment,
 3. Restrooms.
 - Provide for refuse removal and disposal (e.g. crates, cartons, packing)
 - It is required to minimize vibrations within the scan room. It is the customer's responsibility to contract a vibration consultant/engineer to implement site design modifications to meet the GE vibration specification. Refer to the system Pre-installation manual for vibration specifications.

ENVIRONMENT

ALTITUDE

- Operating altitude: from -150 m [-492 ft] (below) to 3000 m [9843 ft] (above) sea level.

MAGNETIC FIELD SPECIFICATIONS

- Limit the magnetic interference to guarantee specified imaging performance.

GANTRY

- Ambient static magnetic fields less than 1 Gauss.
- Ambient AC magnetic fields less than 0.01 Gauss.

OPERATOR CONSOLE, PARC4.X and Computer Equipment

- Ambient static magnetic fields less than 10 Gauss.

SYSTEM COMPONENT NOISE LEVEL

- **Maximum Gantry Audible Noise Level:** The maximum ambient noise level is produced by the gantry during a CT scan acquisition. It is less than 68 dBA when measured at a distance of 1 m [3.3 ft] from the nearest gantry surface in any direction.
- **Maximum Console Audible Noise Level:** The maximum ambient noise levels is less than or equal to 54 dBA when measured at a distance of 1 m [3.3 ft] from nearest console surface in any direction.

BACKGROUND RADIATION

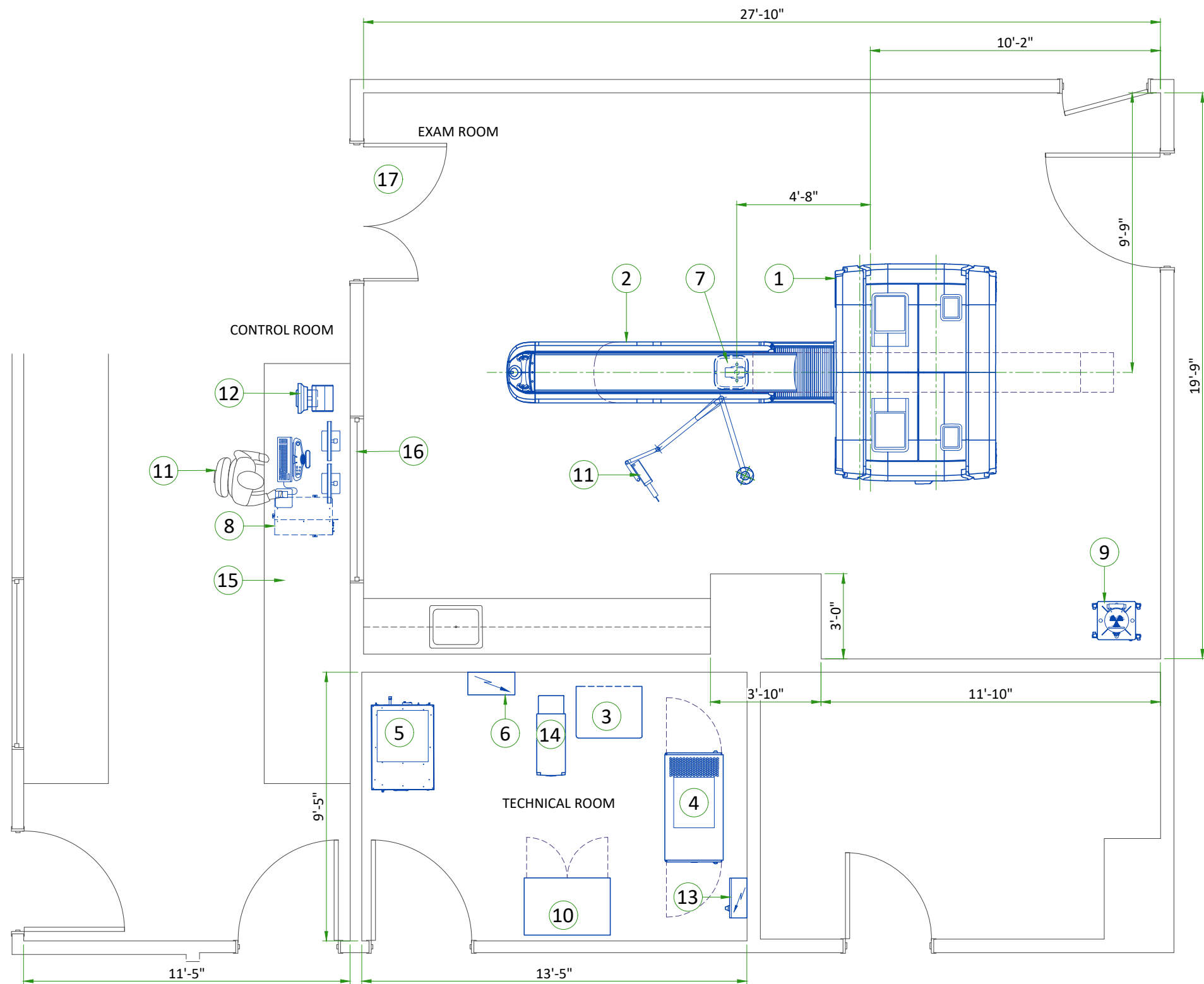
- It is important that background radiation be kept to a minimum. The coincidence detection used in a PET system allows a moderate amount of external singles events. The PET/CT system has been found to have less than 1% deadtime if the external field is below 1 mR/hr from a single source.
- Because area background can be more general than a single source, a lower limit is appropriate. If the area dose rate is maintained to less than 0.2 mR/hr (due to 511 or lower energy gamma rays) at the covers, detector deadtime should not exceed 1%.
- Radioactive sources must be stored in approved shielded containers or be stored in a separate room (hot lab) adjacent to, and accessible from, the Scan Room. This hot lab should be near the cyclotron (if used). Doses should be prepared in the same area.

VIBRATION SPECIFICATIONS

- Shock Restrictions: The system cannot tolerate shock or vibration. System components cannot be tipped, dropped, or hoisted.
- The scanning facility shall be isolated from vibration such as; hospital power plants, pumps, motors, air handling equipment, air conditioning units, nearby rooms with exercise equipment or where exercise occurs, hallway foot traffic, elevators, parking lots, roads, subways, trains, and heliports; otherwise, vibration will affect the image quality of the scanner.
- PET/CT systems are sensitive to vibration and may display limited performance if exceeding the vibration limits listed below. The band of frequencies in which systems exhibit the most sensitivity appears at or near the resonant frequencies of the gantry and the patient table, the latter of which varies depending on patient mass and location. These frequencies fall within the following ranges:
 - Patient Table: 2 – 10 Hz
 - Gantry: 8 – 14 Hz
- It is the customer's responsibility to contract a vibration consultant or qualified engineer to verify that these specifications are met and implement an appropriate solution.

IMPORTANT CUSTOMER READINESS ALERT

- This equipment involves the use of radioactive isotopes, including those sources necessary for equipment calibration. Appropriate regulatory compliance and licensing must be arranged by the customer early in the planning process and then demonstrated/available for equipment installation.
- Note: delivery path down corridors for gantry's and table must be evaluated prior to construction, as 90 degree turns require specific corridor width.



LEGEND

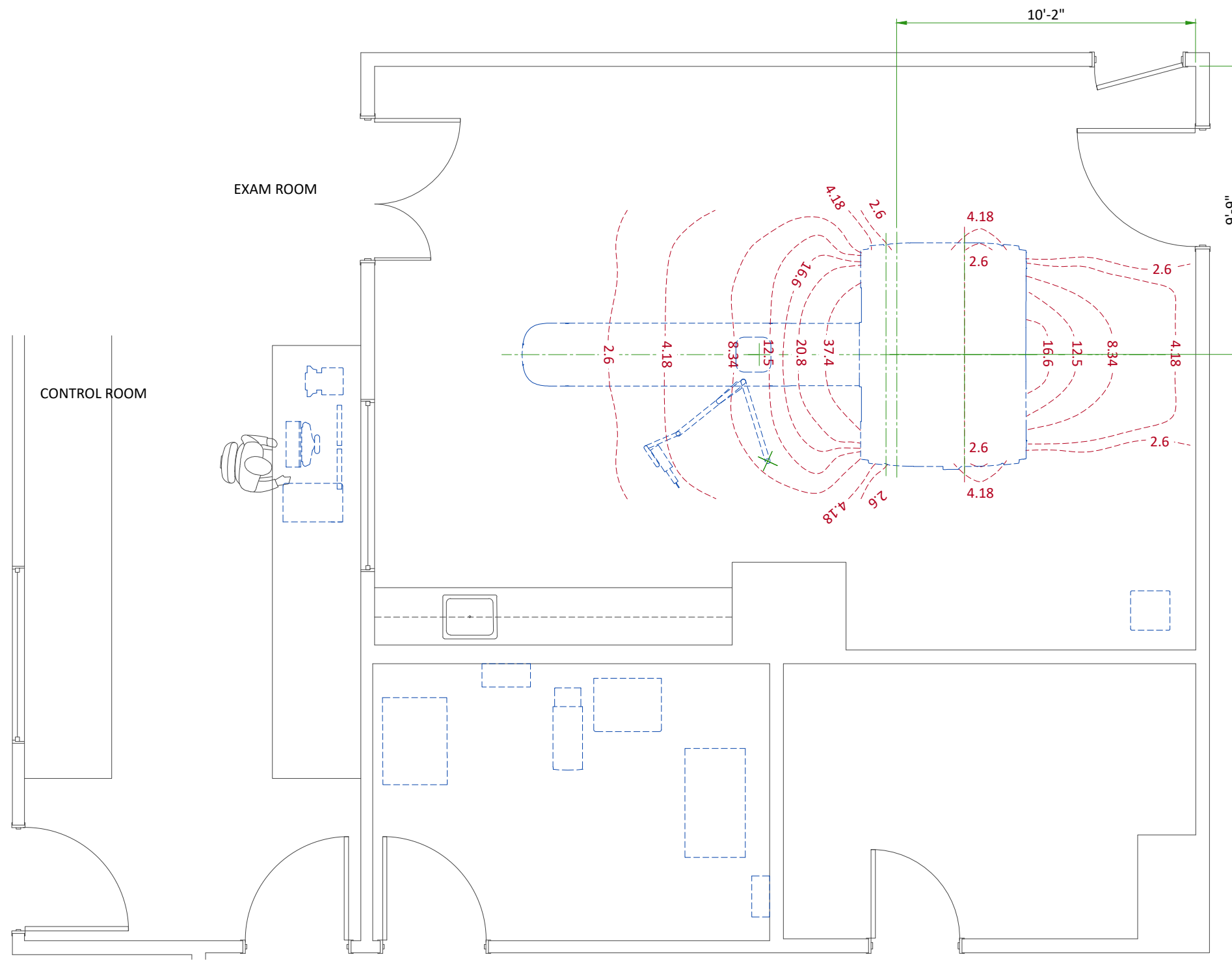
BY	ITEM	DESCRIPTION	MAX HEAT OUTPUT (BTU/h)	WEIGHT (lbs)	MAX HEAT OUTPUT (W)	WEIGHT (kg)
A	1	GANTRY	21257	6192	6230	2808
A	2	PATIENT TABLE	1024	1808	300	820
A	3	POWER DISTRIBUTION UNIT (PDU)	9724	816	2850	370
A	4	RECONSTRUCTION MINI CABINET (PARC4.X)	12966	497	3800	225.2
A	5	AIRSYS CHILLER	9724	485	2850	220
A	6	CHILLER PDB	-	66	-	30
A	7	AUTO PATIENT POSITIONING DEPTH CAMERA	-	7	-	3.2
A	8	OPEN CONSOLE	3207	142	940	64.5
A	9	ANNULUS PHANTOM SHIELD CONTAINER	-	309	-	140
A	10	GE STORAGE CABINET	-	150	-	68
A	11	INJECTOR ON CEILING	-	79	-	36
A	12	INJECTOR CONTROL	-	-	-	-
B	13	MAIN DISCONNECT PANEL (MDP)	-	46	-	21
A	14	PARTIAL UPS 14.4 KVA	5122	609	1501.1	276
C	15	COUNTER TOP FOR EQUIPMENT- PROVIDE GROMMETED OPENINGS AS REQUIRED TO ROUTE CABLES				
C	16	LEAD GLASS WINDOW				
C	17	MINIMUM OPENING FOR EQUIPMENT DELIVERY IS 1067 mm x 2083 mm [42 in x 82 in], CONTINGENT ON A 3048 mm [120 in] CORRIDOR WIDTH				

EXAM ROOM HEIGHT

FINISHED FLOOR TO SLAB HEIGHT	TBD
FALSE CEILING HEIGHT	9'-0"

For Accessory Sales: (866) 281-7545 Options 1, 2, 1, 2 or mail to: gehaccessoriesales@ge.com

RADIATION PROTECTION LAYOUT



SHIELDING REQUIREMENTS SCALING

CHANGED PARAMETER (mAs)	MULTIPLICATION FACTOR (new mAs/100)
80 kV	0.24
100 kV	0.45
120 kV	0.71
140 kV	1.00
1 mm aperture	0.20
3 mm aperture	0.22
5 mm aperture	0.27
10 mm aperture	0.38
15 mm aperture	0.48
20 mm aperture	0.59
30 mm aperture	0.79
40 mm aperture	1.00

SHIELDING REQUIREMENTS:

Engage a qualified radiological health physicist to review your scan room shielding requirements, taking into consideration:

- Scatter radiation levels within the scanning room
- Equipment placement.
- Weekly projected work-loads (number of patients/day technique (kvp*ma))
- Materials used for construction of walls, floors, ceiling, doors, and windows.
- Activities in surrounding scan room areas.
- Equipment in surrounding scan room areas (e.g., film developer, film storage)
- Room size and equipment placement within the room relative to room size.

The illustrations on this page depict measured radiation levels within the scanning room, while scanning a 32 cm CTDI phantom with the technique shown:

- 140 kV
- 100 mA
- 1 sec
- 40 mm

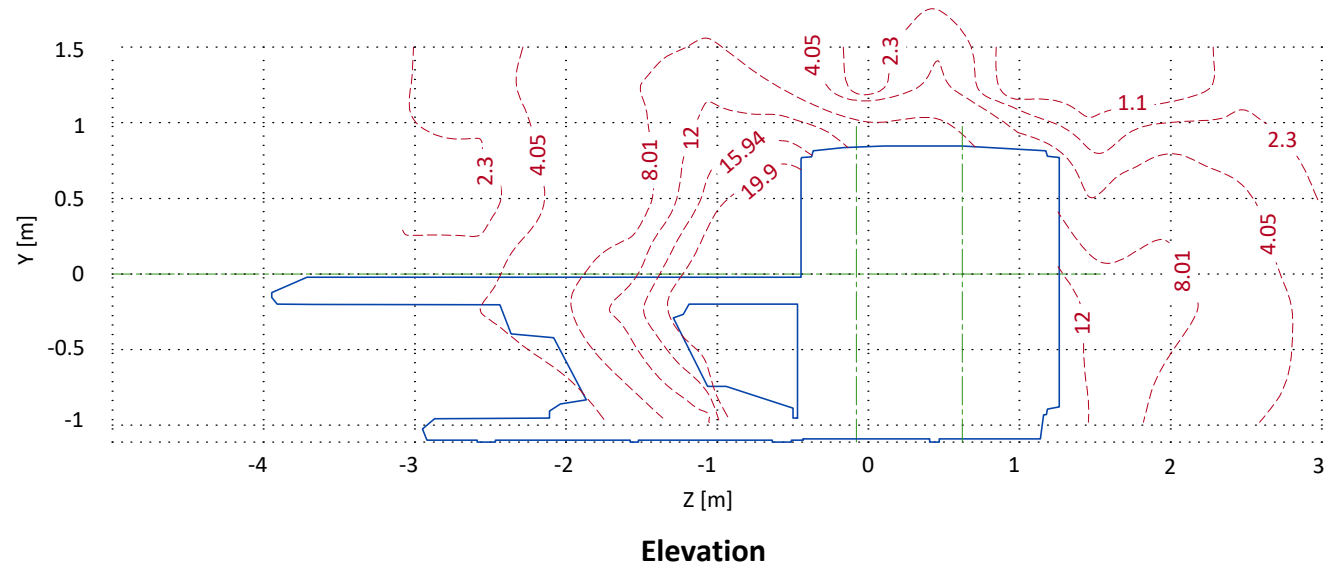
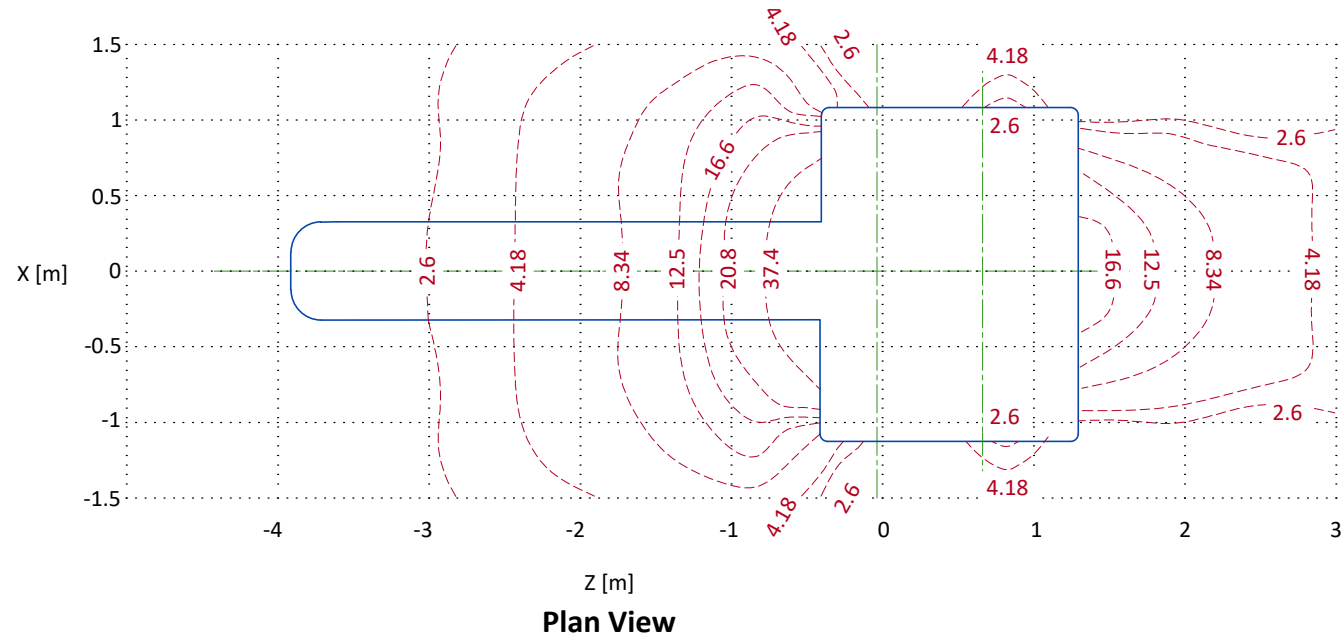
Use the mAs, kV and aperture scaling factors in the table shown here to adjust exposure levels to the scan technique used at the site.

NOTE: Actual measurements can vary. Expected deviations equals $\pm 15\%$, expect for the 5 mA and 1 mm techniques, where variations may be greater (up to a factor of 2), due to the inherent deviation in small values. The maximum deviation anticipated for tube output equals $\pm 40\%$.

RADIATION SCATTER - BODY PHANTOM

NOTE: 140 kV
100 mAs/scan
1 sec
40mm aperture

The iso-countour dose levels are in $\mu\text{Gy}/\text{sec}$ (micrograys/sec) to measure radiation levels. The conversion factor from mR to μGy (micrograys) is: $1 \text{ mR} = 8.69 \mu\text{Gy}$.



DETAIL NOT TO SCALE

RADIOACTIVE ISOTOPES

RADIOACTIVE ISOTOPES AND RADIOPROTECTION

Since the system produces X-ray radiation and involves the use of radioactive isotopes, compliance with Nuclear Regulatory Commission regulations (or country similar regulatory requirements), must be adhered to and all permissions obtained well in advance.

It is Customer's responsibility consult a qualified radiological health physicist for radiation protection requirements for the walls, floor, ceiling, doors, window glass, etc.(lead content and thickness) and warning lights and signs, in accordance with local requirements.

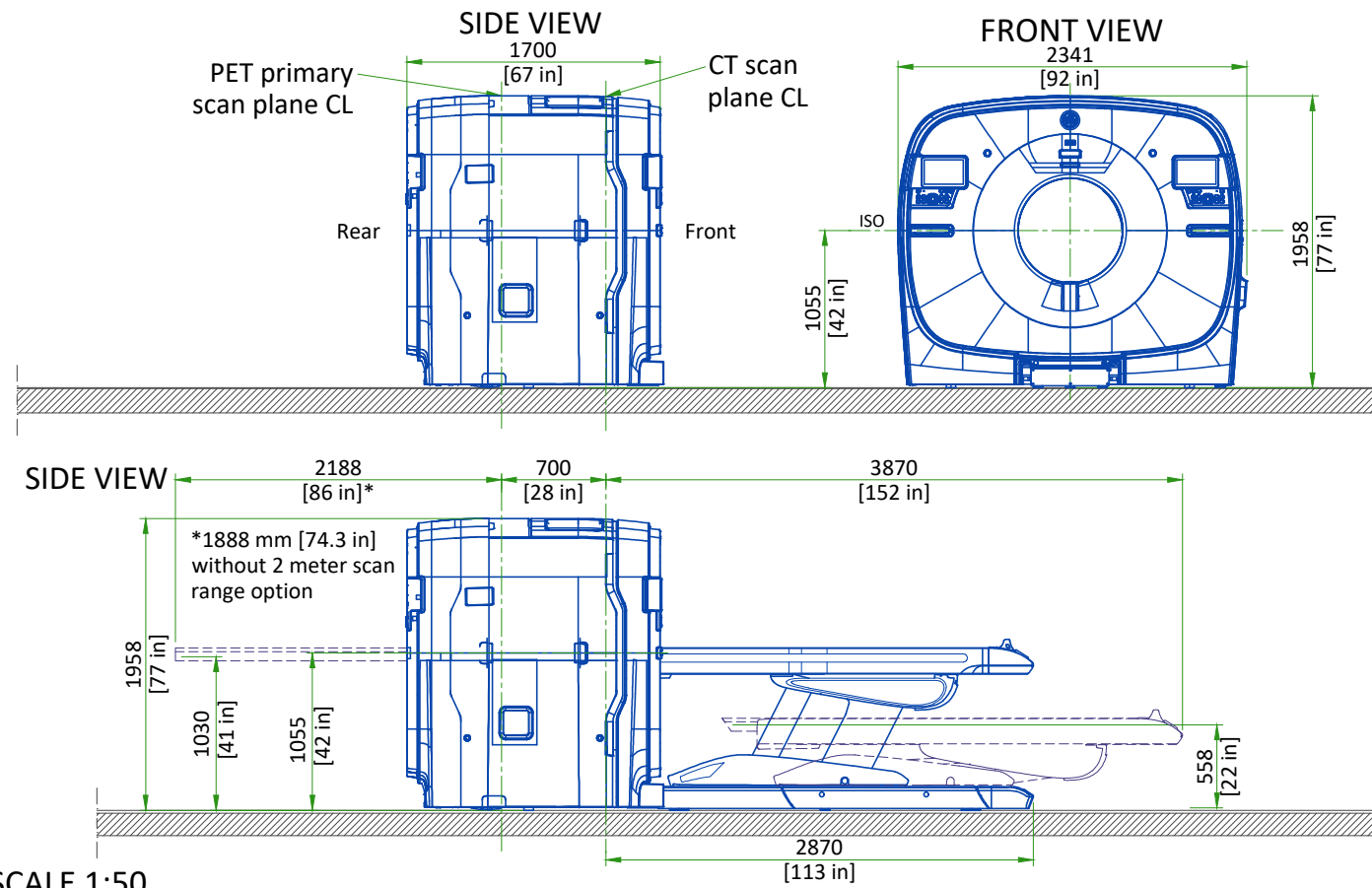
It is essential that regulatory compliance and preparations are completed early so that required source materials can be obtained prior to installation, including calibration sources and isotopes. These sources and isotopes may have fairly long delivery lead times and a short half-life, so that it may not be advisable to store them over long periods of time.

RADIOACTIVE SOURCE - ISOTOPE

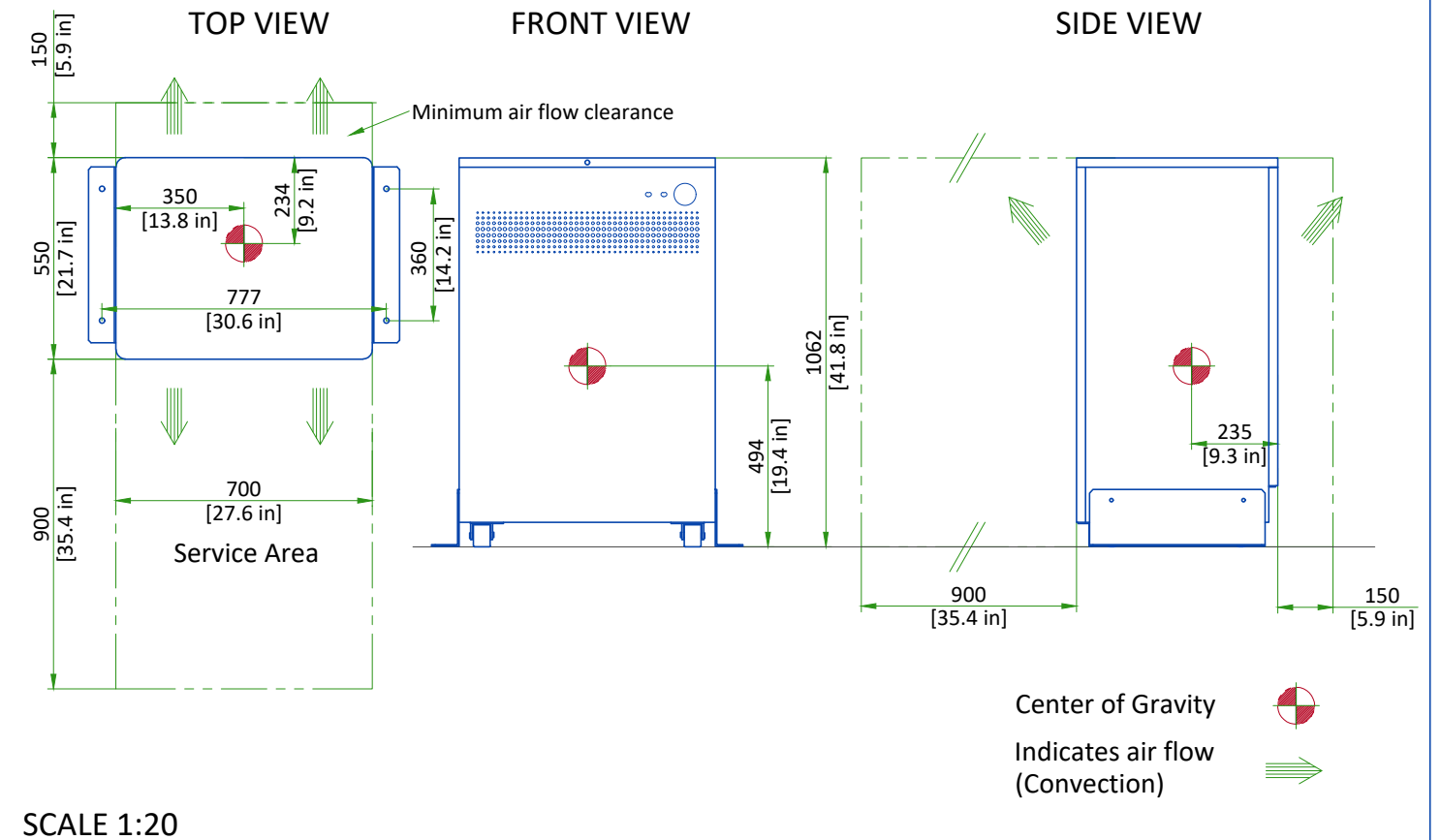
The PET/CT system uses the following radioactive sources during calibration and the Daily QA Check.

Daily QA Check (Annulus phantom)	Isotope	Germanium-68
	Activity level	55 MBq \pm 20%
Check Image Alignment procedure (VQC phantom)	Isotope	Germanium-68
	Activity level	3.5 MBq
Typical Positron Emitting Isotopes include	Fluorine 18	
	Carbon 11	
	Nitrogen 13	
	Oxygen 15	
It is the customer's responsibility provide isotopes for system calibration and prepare the required doses.		

GANTRY WITH PATIENT TABLE

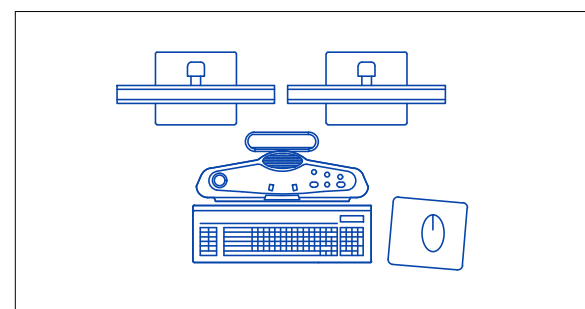
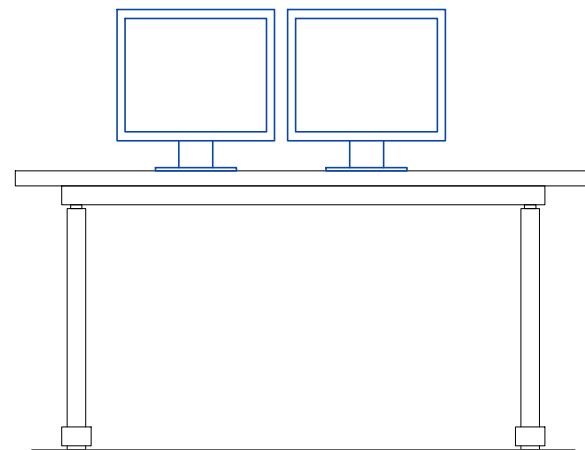


POWER DISTRIBUTION UNIT (PDU)

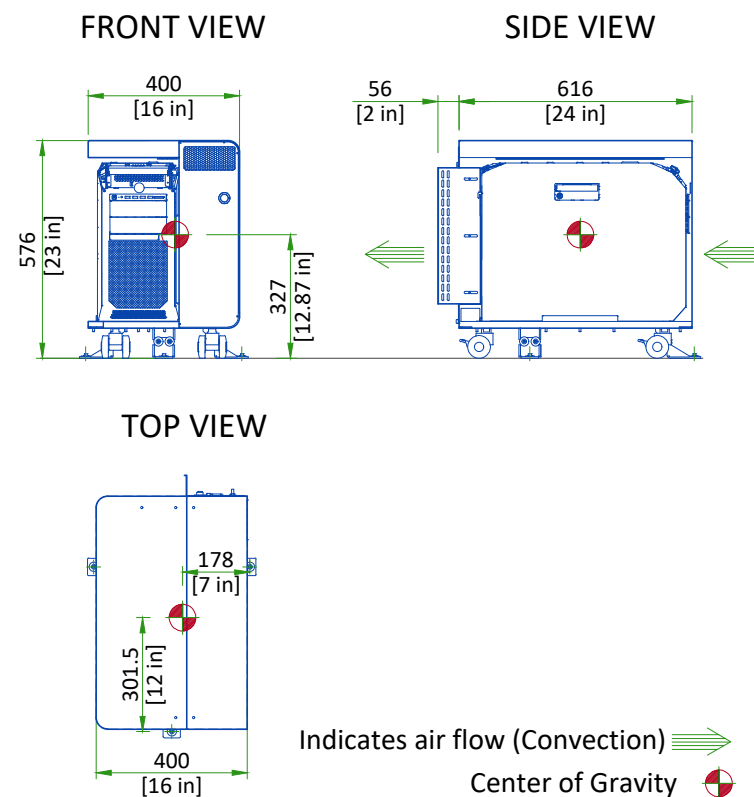


CUSTOMER SUPPLIED WORKSPACE AND OPERATOR CONSOLE

CUSTOMER SUPPLIED TABLE



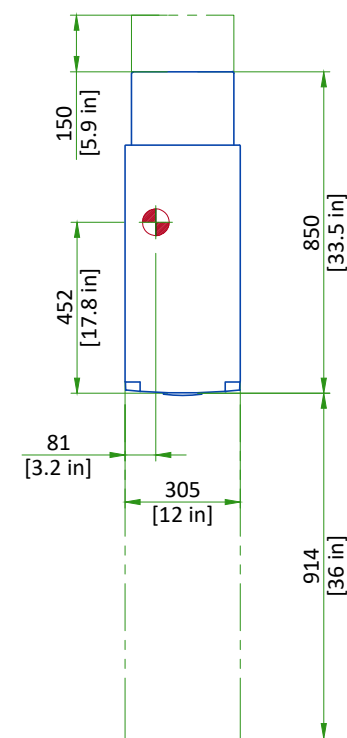
CONSOLE DIMENSIONS



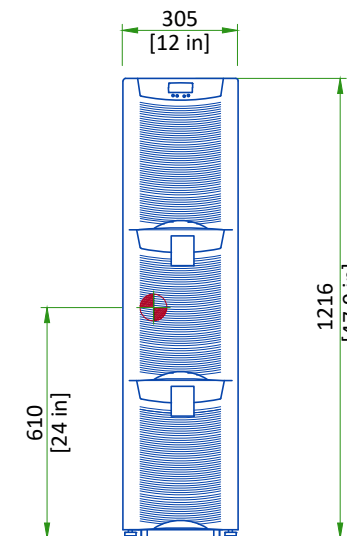
SCALE 1:20

UNINTERRUPTIBLE POWER SUPPLY

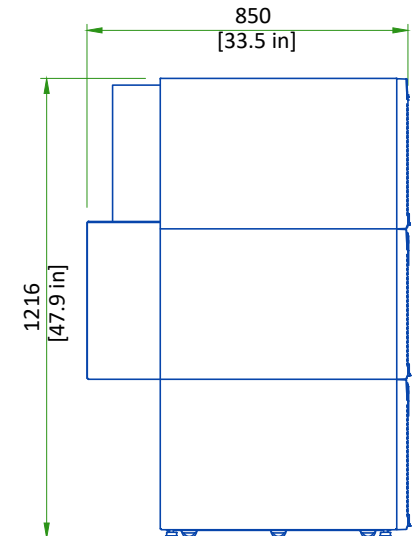
TOP VIEW



FRONT VIEW



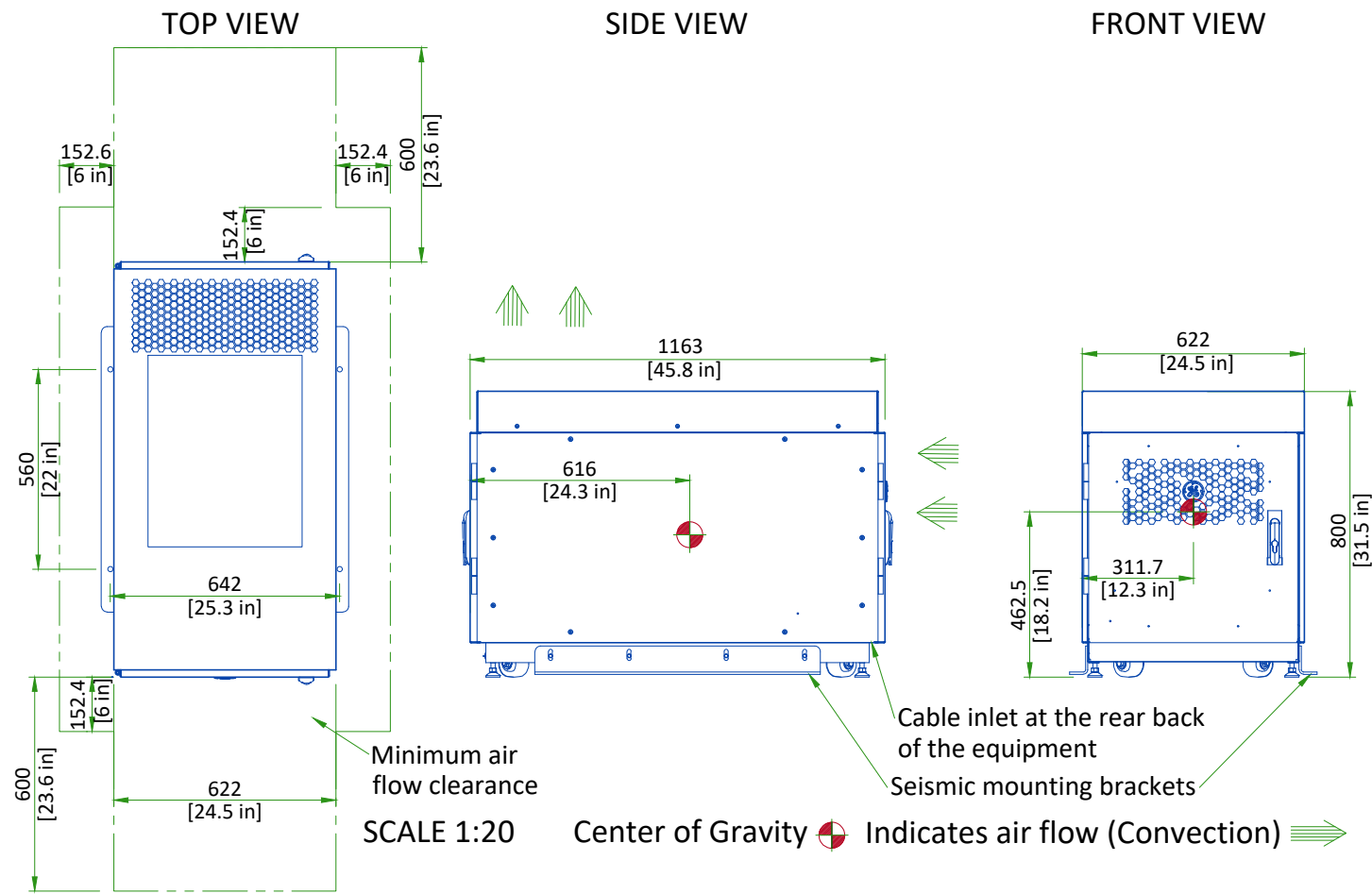
SIDE VIEW



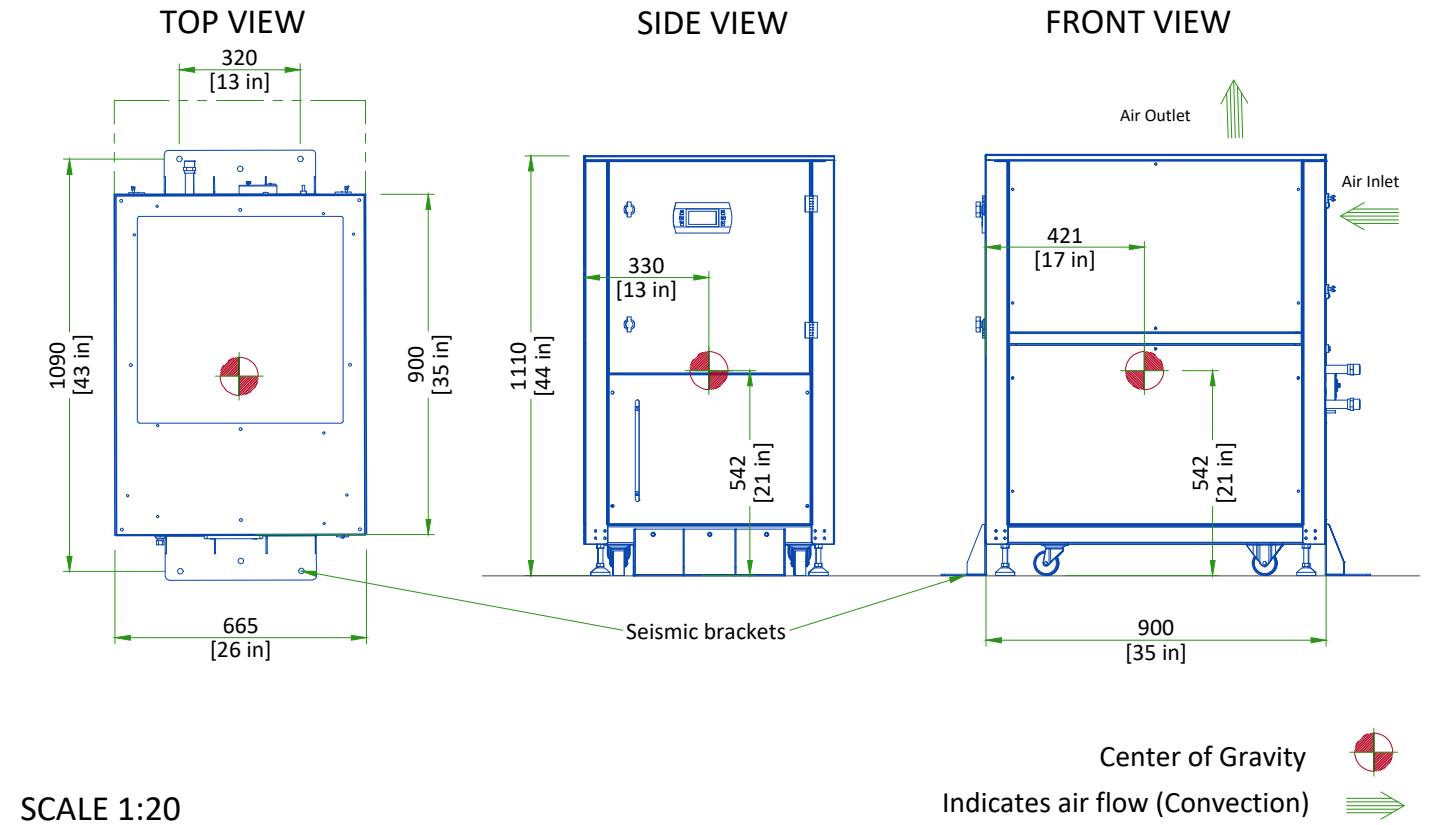
SCALE 1:20

Center of Gravity

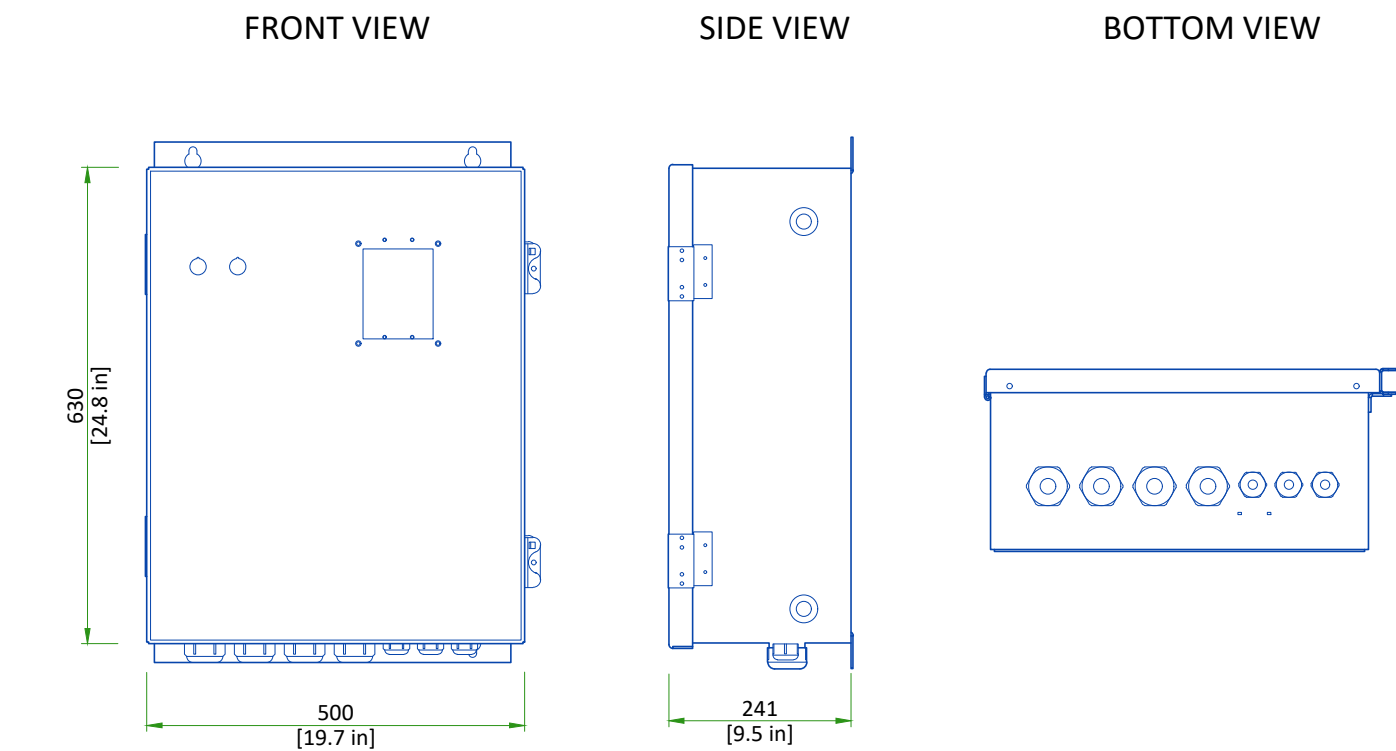
PARC4.X RECONSTRUCTION MINI CABINET



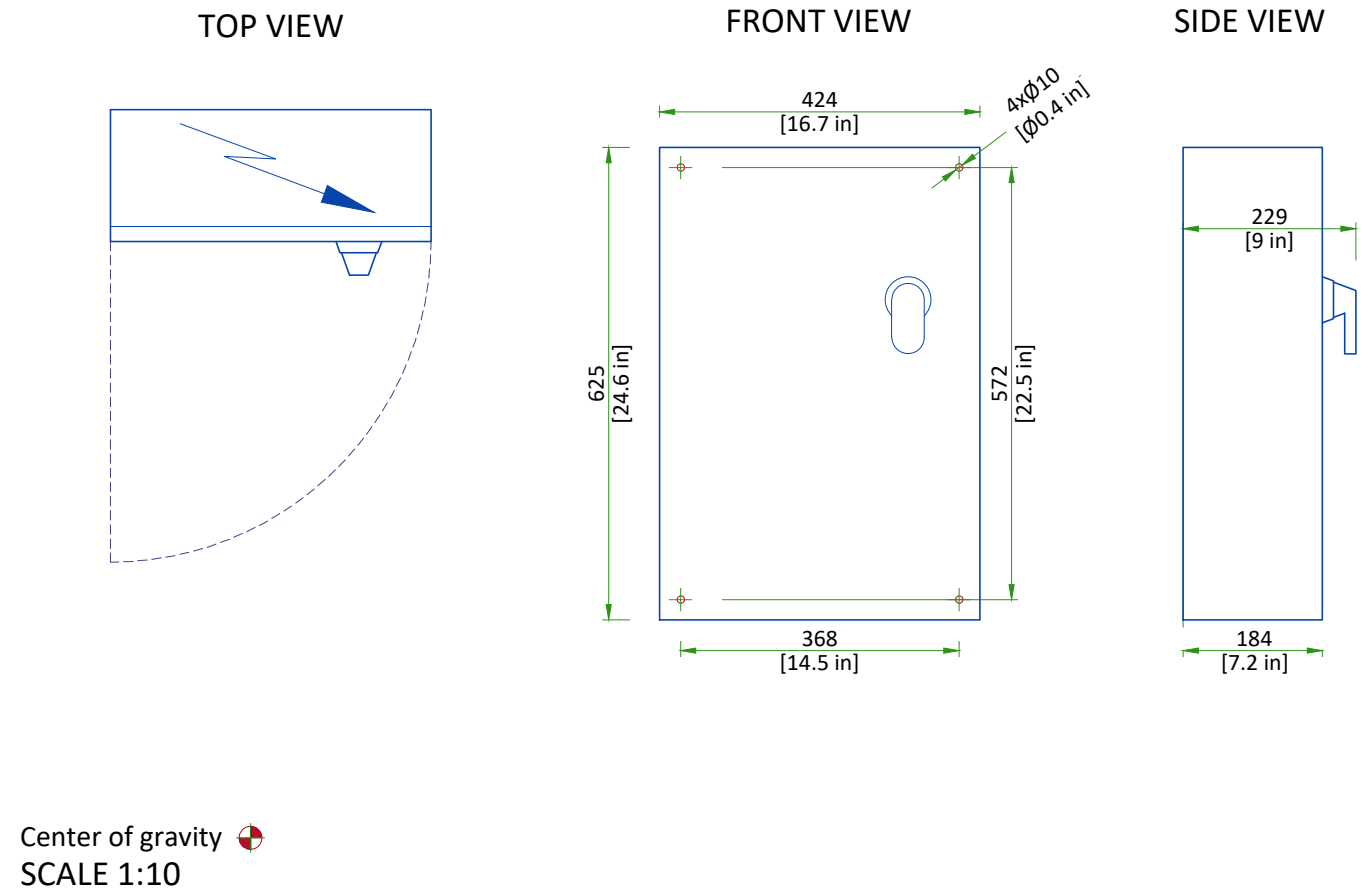
CHILLER



CHILLER PDB



MAIN DISCONNECT PANEL



DELIVERY

THE CUSTOMER/CONTRACTOR SHOULD:

- Provide an area adjacent to the installation site for delivery and unloading of the GEHC equipment.
- Ensure that the dimensions of all doors, corridors, ceiling heights are sufficient to accommodate the movement of GEHC equipment from the delivery area into the definitive installation room.
- Ensure that access routes for equipment will accommodate the weights of the equipment and any transportation, lifting and rigging equipment.
- Ensure that all necessary arrangements for stopping and unloading on public or private property not belonging to the customer have been made.

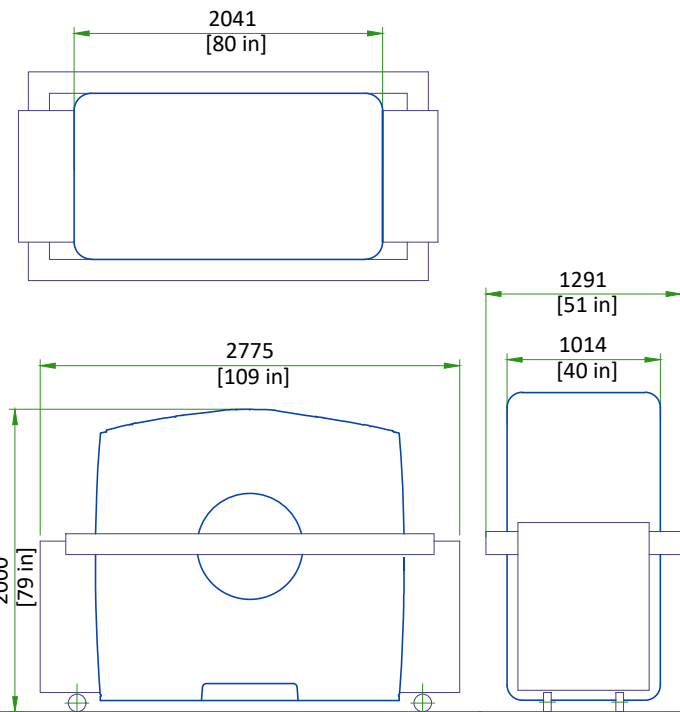
DIMENSIONS OF DELIVERY WITH DOLLY TRANSPORT EQUIPMENT

Below dimensions shown with side rails on. The minimum unobstructed hallway width is 1803 mm [71 in], the minimum clear doorway openings is 1067 mm [42 in] to accommodate delivery of the system.

EQUIPMENT	DIMENSIONS			WEIGHT	
	LENGTH	WIDTH	HEIGHT		
PATIENT TABLE (Blue dollies)	LENGTH	3836 mm	151 in	1165 kg	2568 lbs
	WIDTH	864 mm	34 in		
	HEIGHT	1410 mm	55.5 in		
CT GANTRY	LENGTH	2775 mm	109 in	1835 kg	4045 lbs
	WIDTH	1291 mm	51 in		
	HEIGHT	2000 mm	79 in		
PET IMAGE RING	LENGTH	2775 mm	109 in	1490 kg	3285 lbs
	WIDTH	926 mm	36.5 in		
	HEIGHT	1713 mm	67.4 in		

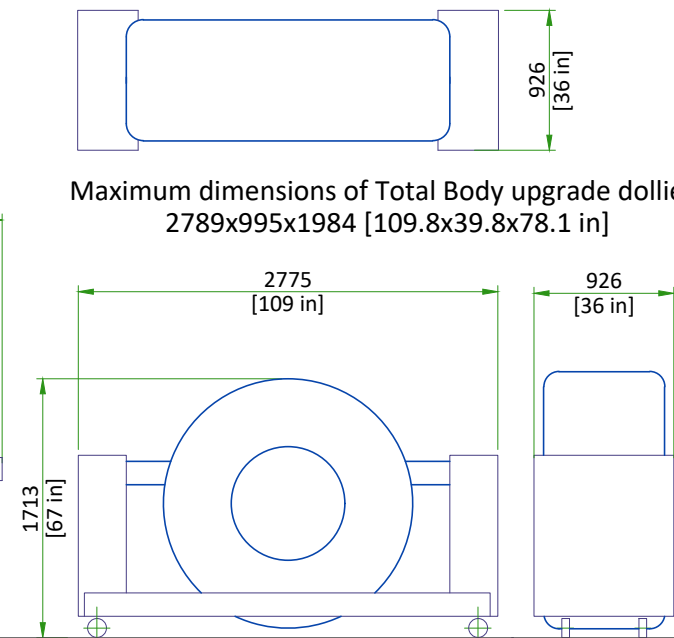
SHIPPING DOLLY DIMENSIONS FOR GANTRY

CT GANTRY



Weight with dollies and side rails = 1835 kg [4049 lbs]

PET IMAGE RING

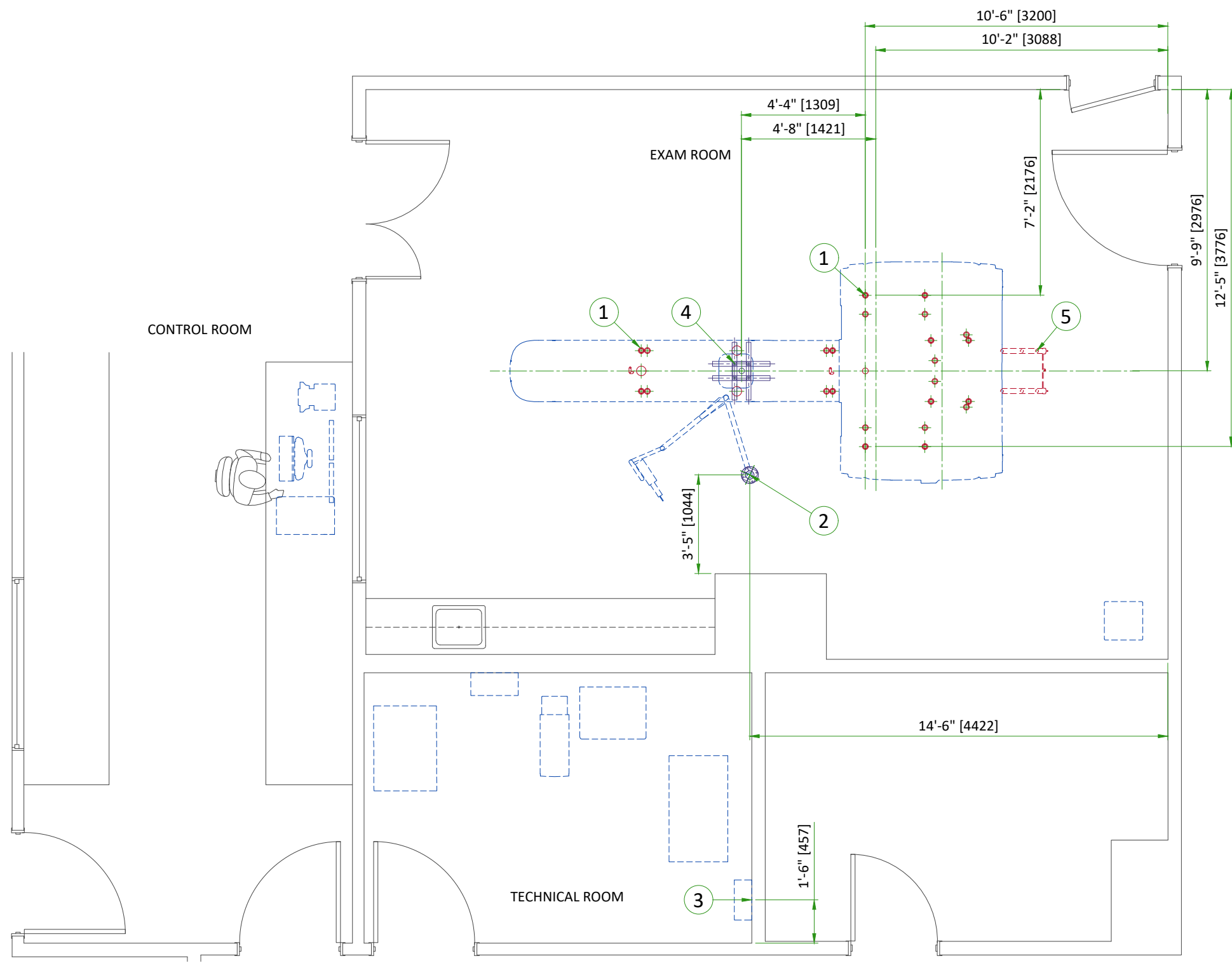


Weight with dollies = 1490 kg [3285 lbs]
Total Body weight with dollies (max) = 1810 kg [3991 lbs]

Maximum dimensions of Total Body upgrade dollies:
2789x995x1984 [109.8x39.8x78.1 in]

STRUCTURAL NOTES

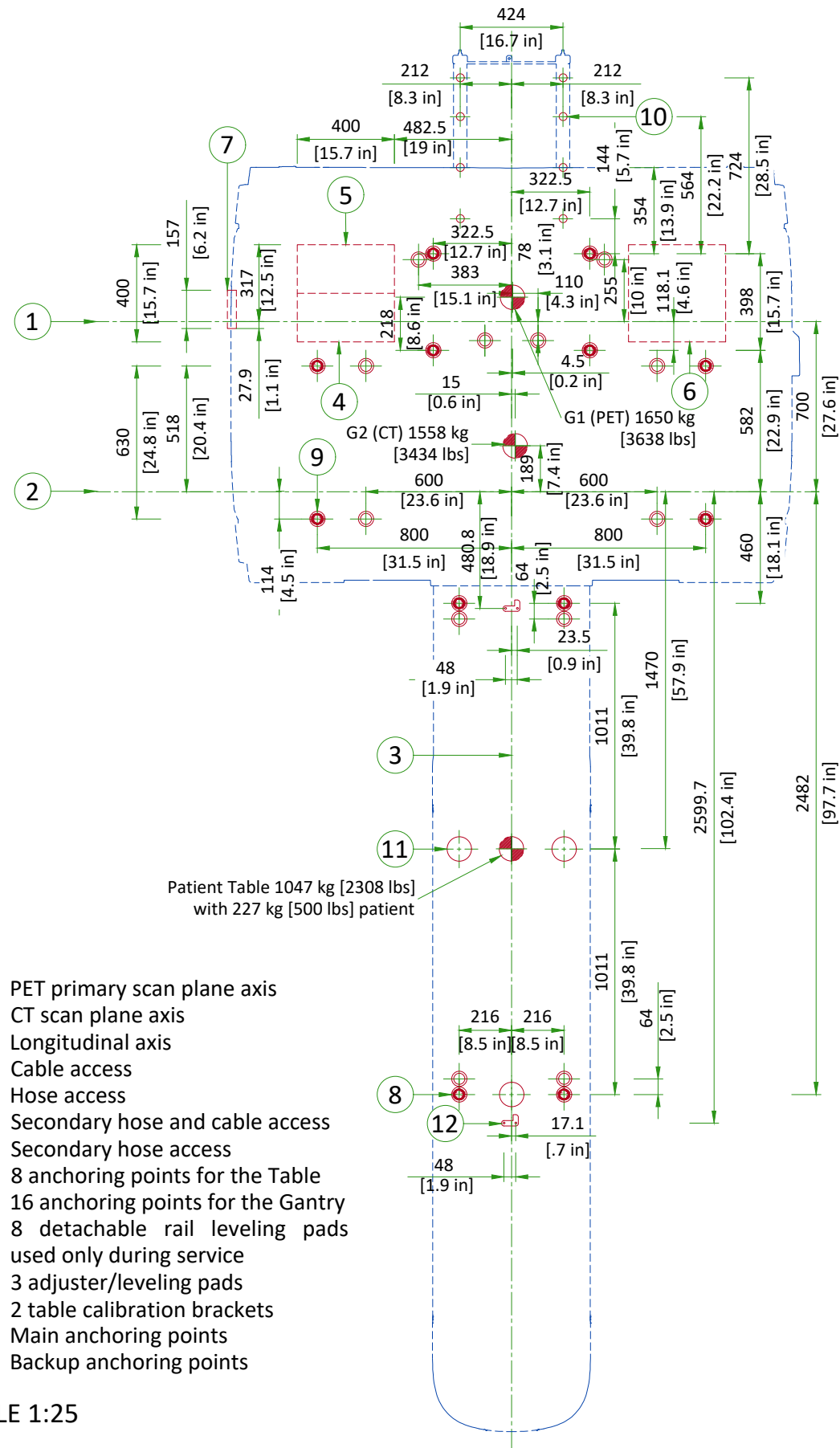
- Methods of support for the steelwork that will permit attachment to structural steel or through bolts in concrete construction should be favored. Do not use concrete or masonry anchors in direct tension.
- All units that are wall mounted or wall supported are to be provided with supports where necessary. Wall supports are to be supplied and installed by the customer or his contractors. See plan and detail sheets for suggested locations and mounting hole locations.
- All ceiling mounted fixtures, air vents, sprinklers, etc. To be flush mounted, or shall not extend more than 6,35mm (1/4") below the finished ceiling.
- Floor slabs on which equipment is to be installed must be level to 6.00mm (1/4") in 3050mm (10'-0")
- Dimensions are to finished surfaces of room.
- Customers contractor must provide all penetrations in post tension floors.
- Customers contractor must provide and install any non-standard anchoring. Documents for standard anchoring methods are included with GE equipment drawings for geographic areas that require such documentation.
- Customers contractor must provide and install hardware for "through the floor" anchoring and/or any bracing under access floors. This contractor must also provide floor drilling that cannot be completed because of an obstruction encountered while drilling by the GE installer such as rebar etc.
- It is the customer's responsibility to perform any floor or wall penetrations that may be required. The customer is also responsible for ensuring that no subsurface utilities (e.g., electrical or any other form of wiring, conduits, piping, duct work or structural supports (i.e. post tension cables or rebar)) will interfere or come in contact with subsurface penetration operations (e.g. drilling and installation of anchors/screws) performed during the installation process. To ensure worker safety, GE installers will perform surface penetration operations only after the customer's validation and completion of the "GE surface penetration permit"



ITEM	DESCRIPTION
(CONTRACTOR SUPPLIED & INSTALLED)	
1	Floor contact area for discovery gantry and patient table. See Structural Details.
2	Structural supports for fastening the overhead counterpoised suspension. Support should run continuous with no fittings extending below face of channel, be parallel, square, and in the same horizontal plane, above finished ceiling. Ensure mounting surface is installed level or plumb within +/- 1 degree, and is structurally sufficient to maintain a level or plumb condition under 110 lb (50kg) system load and maximum system moment of 4400 in-lb (500n-m). Methods of support that will permit attachment to structural steel or through bolts in concrete construction should be favored. Do not use screw anchors in direct tension. 14" x 14" x 1/2" thick steel plate provided by manufacturer. See Structural Detail.
3	Support Backing, locate as shown
4	Unistrut or equivalent for mounting patient positioning camera mounting plate on ceiling. Support designed and supplied by customer. Supports to be at least 2' [610mm] in length and located per dimensions on Positioning Camera Mounting Plate structural detail.
5	Floor penetrations not allowed in temporary service rail area.
Camera Position Note: Position of camera(s) must be calculated and verified by GEHC PMI or Field Engineer for final location accuracy.	
Dimension Precision Note: Metric dimensions should be referenced when positioning the CT gantry alignment tool.	

ANCHORING/LOADING DISTRIBUTION TO THE FLOOR

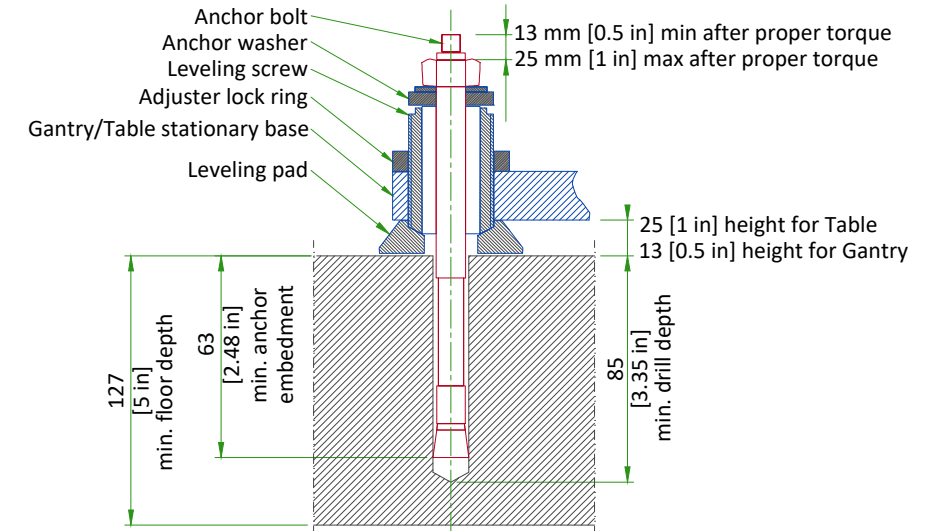
ANCHORING AND FLOOR REQUIREMENTS



- (1) PET primary scan plane axis
- (2) CT scan plane axis
- (3) Longitudinal axis
- (4) Cable access
- (5) Hose access
- (6) Secondary hose and cable access
- (7) Secondary hose access
- (8) 8 anchoring points for the Table
- (9) 16 anchoring points for the Gantry
- (10) 8 detachable rail leveling pads used only during service
- (11) 3 adjuster/leveling pads
- (12) 2 table calibration brackets
- Main anchoring points
- Backup anchoring points

SCALE 1:25

GEHC SUPPLIED GANTRY ANCHORS (5867778)



FINISHED FLOOR REQUIREMENTS

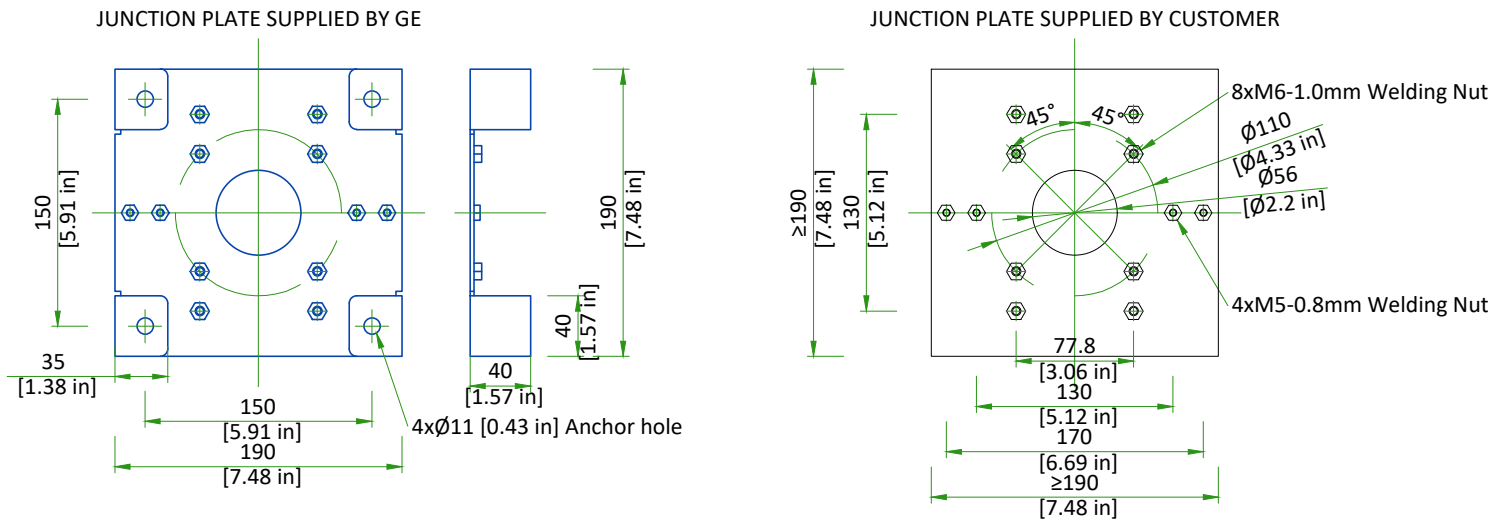
- Installation requires a finished floor in the scan and control rooms.
- The floor surface in the scan room directly under the gantry and table must be level.
- The floor shall be no greater than 6 mm [0.25 in] out of level over a 3048 mm [10 ft] range, with level defined as the horizontal surface between the highest and lowest points.
- The floor shall have a minimum concrete thickness of 127 mm [5 in].
- Shims should not be used to compensate for a floor that does not meet this requirement.
- These requirements apply to all installation types.

NOT TO SCALE

NOTES:

If the concrete floor has a floor covering installed over it (such as floor tile), 17 openings 101.6 mm [4 in] in diameter will be cut into the floor covering to ensure the table and gantry rest on the concrete. (Openings are cut during installation.)

POSITIONING CAMERA MOUNTING PLATE



GE will provide a Junction Plate, shipped with the system. If the Junction Plate supplied by GE can not meet the requests of the customer or the building structure, the customer's architect can design and install the Junction Plate (refer to the right side of the detail) with sufficient strength to hold the camera assembly.

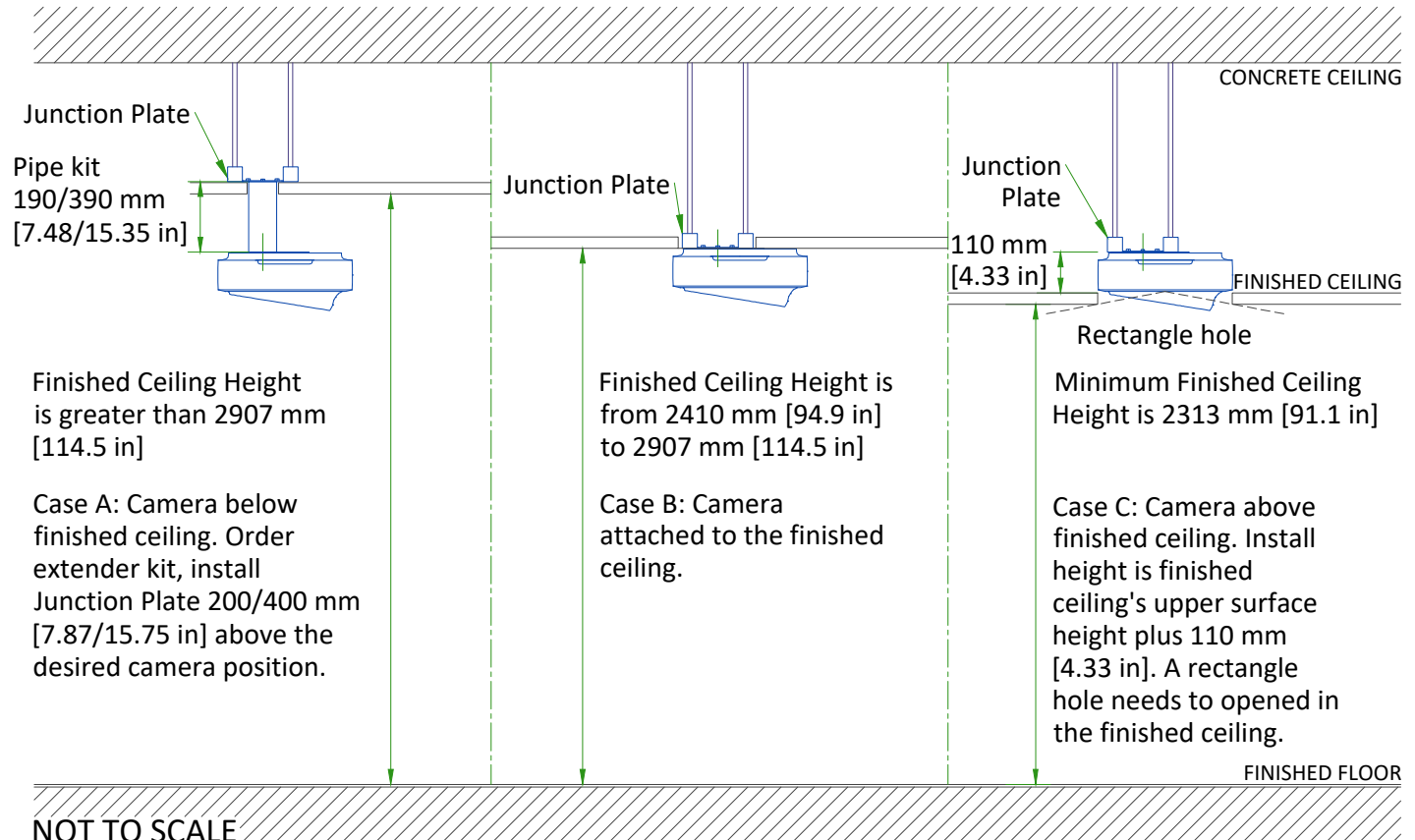
Material: Steel material with a min. tensile strength of 375 MPa
Plate thickness: 2.5 mm [0.10 in]

Welding Nut: Meet GB-T 13681-1992 requirement or equivalent		
	M5-0.8 mm	M6-1.0 mm
Thickness (mm [in])	3.7-4 [0.15-0.16]	4.7-5 [0.19-0.20]
Pledge load (N)	11000	15500

NOTE: The system manufacturer will NOT inspect and test that the fixing methods between the Junction Plate and the building structure meet the loading capacity specified (recommend a 6x safety factor), which is the customer's responsibility. The weight of the camera assembly is approximately 3.2 kg [7.05 lbs], suggest the safety load on the Junction Plate is no less than 20 kg [44.09 lbs]. If the Anchor Bolt is not applicable for site requirement, the customer's architect can consider other methods (such as welding...) to fix the Junction Plate. Presetting for site preparation of the Camera installation, customer had better install the Junction Plate in advance before the system installation.

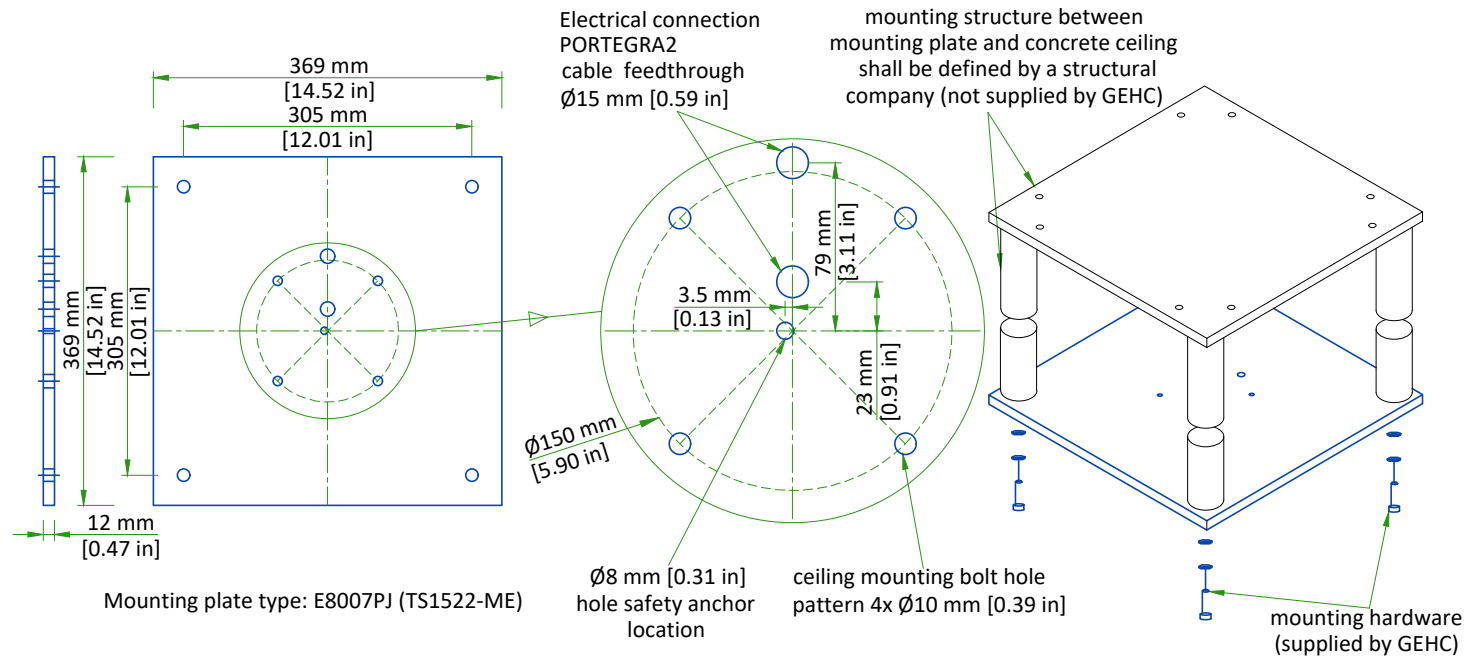
NOT TO SCALE

POSITIONING CAMERA INSTALLATION POSITION



NOT TO SCALE

MAVIG SUSPENSION MOUNTING METHOD



Column flange and safety chain fixation to concrete or to structure other than MAVIG anchoring plate or MAVIG bridge shall be defined by a structural engineer.
All design and pre-installation activity must be done in accordance of the MAVIG Installation manual.
Contact your GEHC Project Manager for OEM documentation. Installation of mounting plate performed by GEHC or GEHC sub-contractor.

NOT TO SCALE

CEILING SUSPENSION DISCLAIMER

Safety and precautionary comments:

Only qualified, licensed technicians can perform electrical connections, installation, removal and repair. It is strongly recommended that at least two persons perform the installation.

Installing the system: Prior to installation, a structural engineer must confirm that the mounting structure is strong enough to provide proper support for the entire system and any attached end devices. Installation must be completed according to local building codes.

Determination of required installation hardware and torque values for installation of the ceiling column and ceiling track is the sole responsibility of the structural engineer.

Ceiling mounted systems must be installed properly. Failure to follow the instructions provided may lead to a potentially dangerous and unstable condition of the system.

GE and/or MAVIG is not responsible for unauthorized modifications made to the system or use of the system for unintended purposes. GE and/or MAVIG cannot be held liable for improper operation and modifications. Since improper modifications may impair proper operation, safety or reliability of the system, product modifications require written authorization from MAVIG.

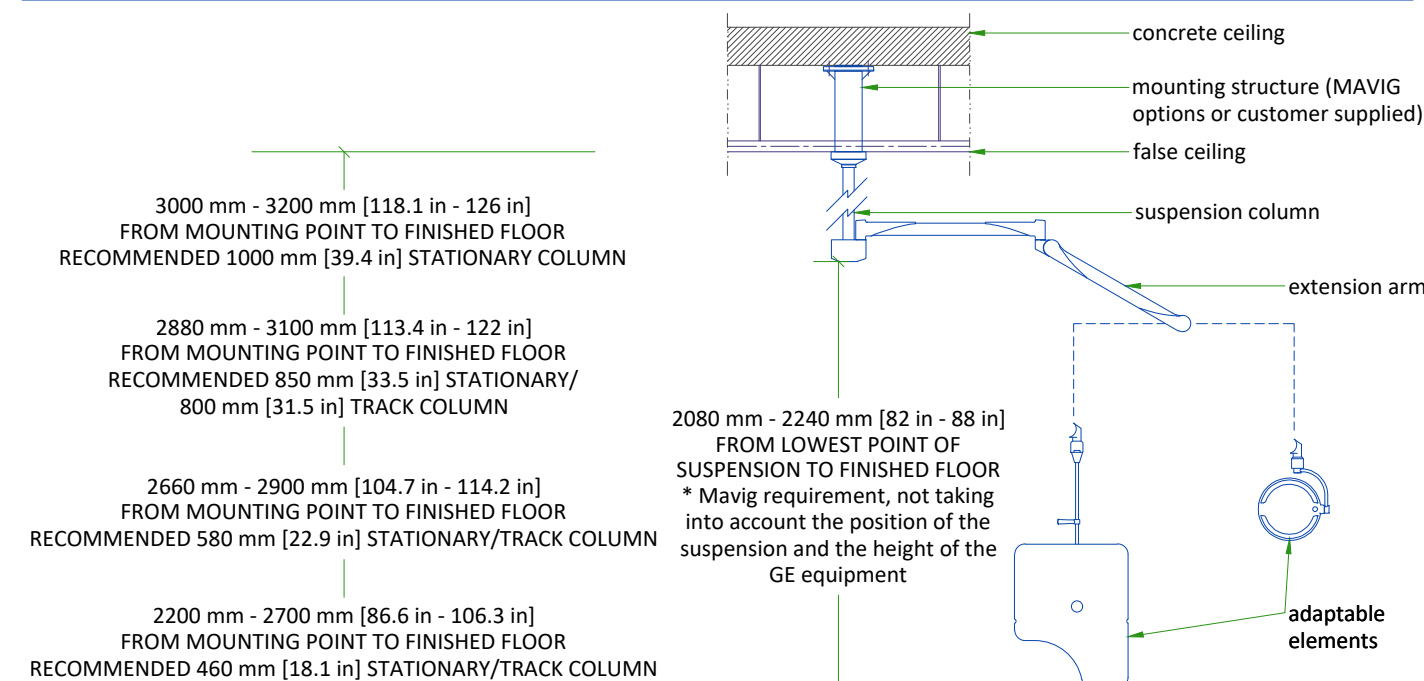
Under GE responsibility or under Customer responsibility, for all pre-installations, whatever is the supporting structure (bridge, chair, Unistrut channel, other channels, direct anchorage in concrete, transversal beam, etc. ...) a certificate must be obtained from a structural engineer.

This certificate shall include the definition of fasteners and of their tightening torque, especially for the non-standard cases described in MAVIG PIM and for which the standard anchoring/screws delivered with product shall not be used but shall be defined (and implemented in most cases) by the structural company.

WARNING:

It is prohibited to alter the length of the ceiling column or remove any securing screws.

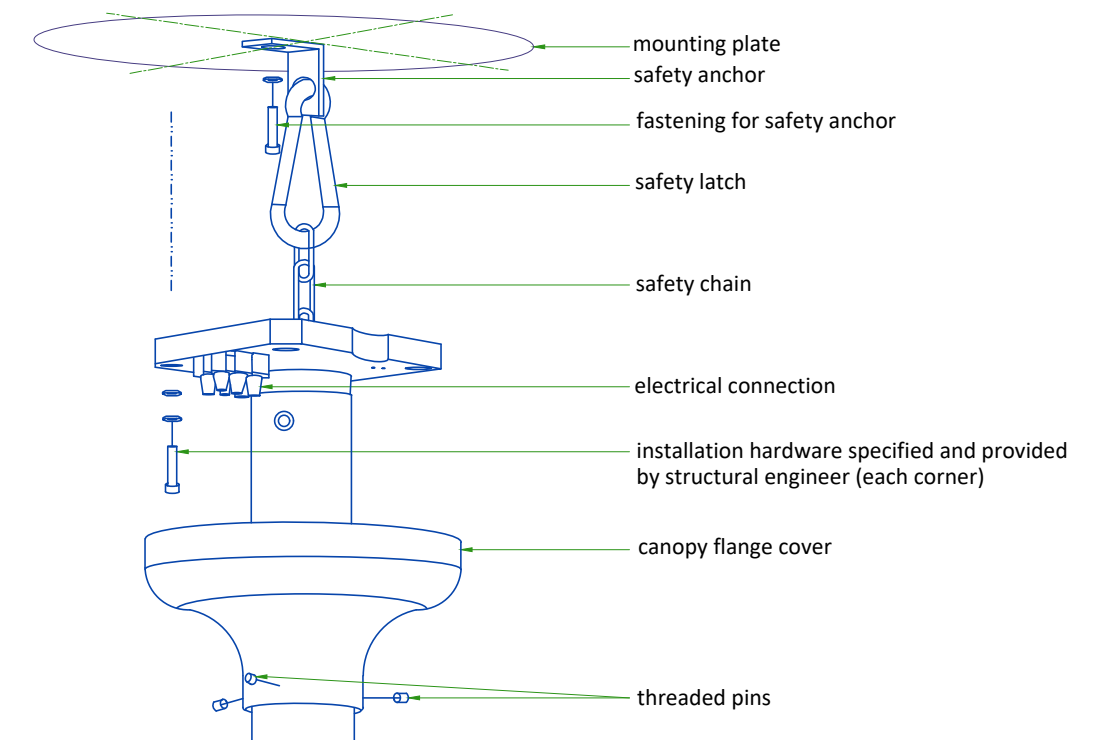
SUSPENSION COLUMN LENGTHS AND INSTALLATION DETAILS



- Available column lengths might differ, please refer to the GE commercial catalog for current selection options
- For rooms with higher mounting point than 3200 mm [126 in], a ceiling construction between structural ceiling and vertical column is suggested which needs to be designed by a structural engineer
- All design and pre-installation activity must be done in accordance of the MAVIG Installation manual
- Contact your GE Project Manager for OEM documentation
- Installation of mounting plate performed by GE or a GE sub-contractor

NOT TO SCALE

PORTEGRA2 COLUMN ASSEMBLY



- Safety chain shall be always attached.
- Do not use shims between column and mounting surface.

All design and pre-installation activity must be done in accordance of the MAVIG Installation manual.
Contact your GE Project Manager for OEM documentation. Installation of mounting plate performed by GE or a GE sub-contractor.

NOT TO SCALE

TEMPERATURE AND HUMIDITY SPECIFICATIONS

IN-USE CONDITIONS

	Min	Recommended	Max
Temperature (up to 2400 m [7874 ft])	18°C	22°C	26°C
	64°F	72°F	79°F
Temperature (up to 3000 m [9842 ft])	18°C	22°C	25°C
	64°F	72°F	77°F
Temperature (up to 4000 m [13123 ft])	18°C	22°C	23°C
	64°F	72°F	73.4°F
Temperature gradient	≤ 3°C/h		
	≤ 5.4°F/h		
Relative humidity (1)	30% to 60%		
Humidity gradient	≤ 5%/h		

STORAGE CONDITIONS

Temperature	0°C to +30°C	+32°F to +86°F
Relative humidity (1)	≤ 70% RH	
Temperature gradient	≤ 3°C/h	≤ 5.4°F/h
Humidity gradient	≤ 5%/h	

Material should not be stored for more than 6 month.

(1) Non-condensing

AIR RENEWAL

According to local standards. The HVAC system should be designed to provide 5 air changes per hour to maintain adequate air quality and temperature.

NOTE : In case of using air conditioning systems that have a risk of water leakage it is recommended not to install it above electric equipment or to take measures to protect the equipment from dropping water.

HEAT DISSIPATION

COMPONENT	ROOM	MAX kW	MAX BTU/hr
WARNING: This chart contains only the principal components of the PET/CT system and does not include information about non-GEHC supplied equipment.			
PET Gantry	Exam room	0.73	2490
CT Gantry	Exam room	5.50	18766
Patient table	Exam room	0.30	1024
Power distribution unit (CT PDU)	Exam room/Technical room	2.85	9724
PARC 4.X (Reconstruction Mini Cabinet)	Exam room/Technical room	3.80	12966
Chiller (Airsys model)	Exam room/Technical room	2.85	9724
Operator Console	Control room	0.84	2866
LCD Monitor (2 units, 50 W [170 BTU/hr] each)	Control room	0.10	341
Omni Total Body upgrade notice: account for up to 10.8 kW [36582 BTU/hr] in the exam room and 27.03 kW [92229 BTU/hr] in the technical room when planning HVAC systems. Technical room is mandatory for 128 configurations.			

OPTIONS			
Dehumidifier option	Exam room	0.94	3200
Partial UPS	Exam room/Technical room	1.5	5118
AW Workstation	Control room	1	3412

CONNECTIVITY REQUIREMENTS

Your new GE Healthcare imaging modality will require local and remote connectivity to enable our full range of digital support:

- Local connectivity - This allows your system to connect to local devices such as PACS and modality worklist. We will require network information to configure the system(s), and a live ethernet port(s) prior to the delivery of the system(s).
- Remote connectivity - Your GE Healthcare service warranty includes InSite™ (applicable to InSite capable products), a powerful broadband-based service which enables digital tools that can help guard your hospital against equipment downtime and revenue loss by quickly connecting you to a GE Healthcare expert.

Depending on product family and software version, imaging systems can be connected in one of the following methods:

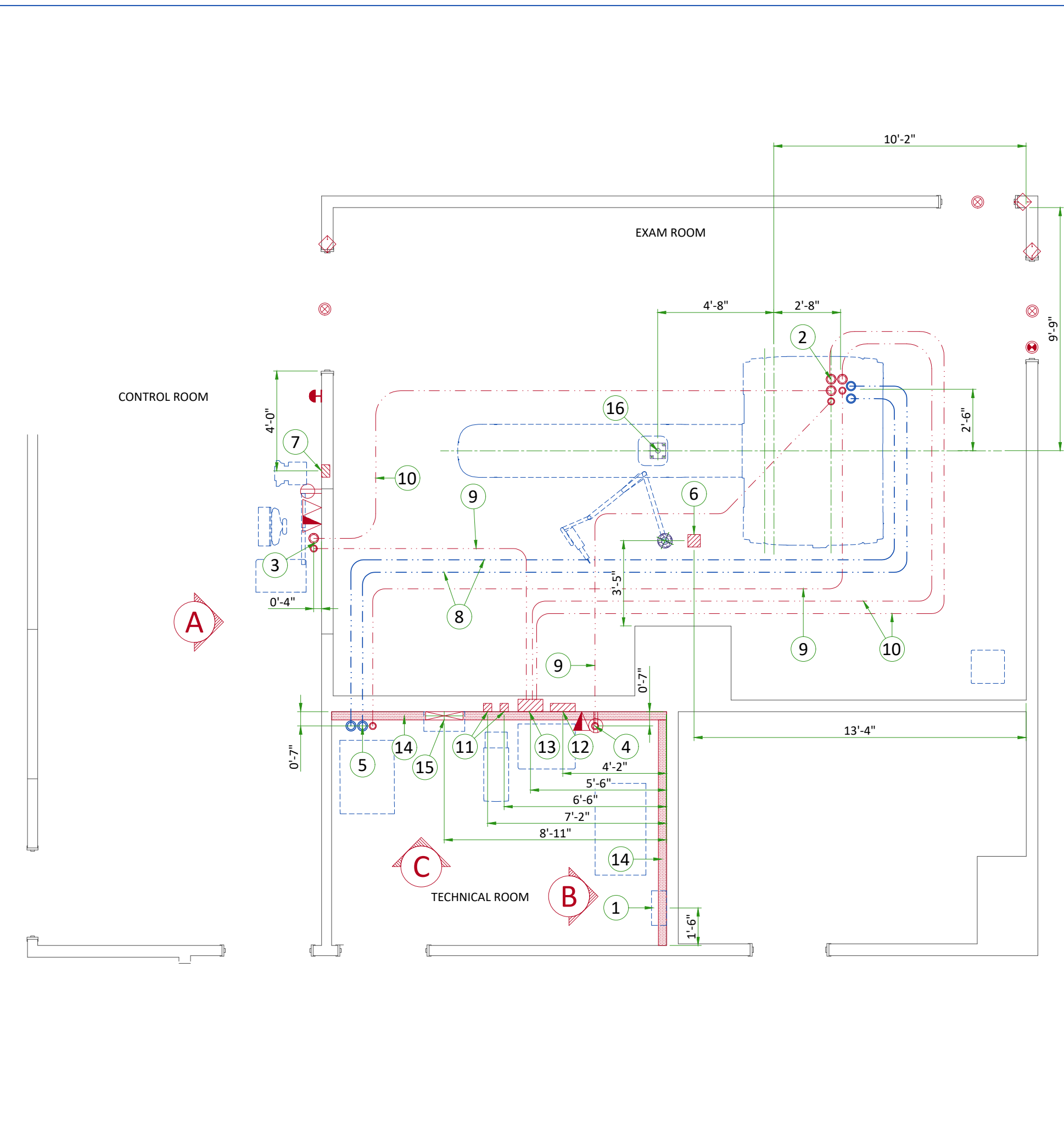
1. TLS over TCP Port 443 (Preferred method for new products) via:
 - a. DNS resolution
 - b. Customer-provided Proxy or
 - c. GE Proxy (Available in some regions)
2. Site-to-Site IPsec VPN tunnel

Please provide the GE project manager with the contact information for the resource that can provide information required to set up these connections. GEHC will send out communication to these contacts, which will include the project's Connectivity requirements, and a Connectivity form. This form will need to be completed and returned to GEHC prior to delivery of the system to ensure the system is tested and connectivity is enabled prior to the completion of the installation.

ELECTRICAL NOTES

1. Aluminum or solid wires are not allowed.
2. Wire sizes given are for use of equipment. Larger sizes may be required by local codes.
3. It is recommended that all wires be color coded, as required in accordance with national and local electrical codes.
4. Conduit sizes shall be verified by the architect, electrical engineer or contractor, in accordance with local or national codes.
5. Convenience outlets are not illustrated. Their number and location are to be specified by others. Locate at least one convenience outlet close to the system control, the power distribution unit and one on each wall of the procedure room. Use hospital approved outlet or equivalent.
6. General room illumination is not illustrated. Caution should be taken to avoid excessive heat from overhead spotlights. Damage can occur to ceiling mounting components and wiring if high wattage bulbs are used. Recommend low wattage bulbs no higher than 75 watts and use dimmer controls (except MR). Do not mount lights directly above areas where ceiling mounted accessories will be parked.
7. Routing of cable ductwork, conduits, etc., must run direct as possible otherwise may result in the need for greater than standard cable lengths (refer to the interconnection diagram for maximum usable lengths point to point).
8. Conduit turns to have large, sweeping bends with minimum radius in accordance with national and local electrical codes.
9. In some cases GEHC will specify ground wires to be sized larger than code. In these situations, the GEHC specification must be followed.
10. A special grounding system is required in all procedure rooms by some national and local codes. It is recommended in areas where patients might be examined or treated under present, future, or emergency conditions. Consult the governing electrical code and confer with appropriate customer administrative personnel to determine the areas requiring this type of grounding system.
11. The maximum point to point distances illustrated on this drawing must not be exceeded.
12. Physical connection of primary power to GEHC equipment is to be made by customers electrical contractor with the supervision of a GEHC representative. The GEHC representative would be required to identify the physical connection location, and insure proper handling of GEHC equipment.
13. GEHC conducts power audits to verify quality of power being delivered to the system. The customer's electrical contractor is required to be available to support this activity.
14. Every installation is unique. The electrical contractor will be required to support the installation of the GEHC equipment by providing knockouts, grommeted openings, bushings, etc. as required. All power connections to be performed by the electrician.

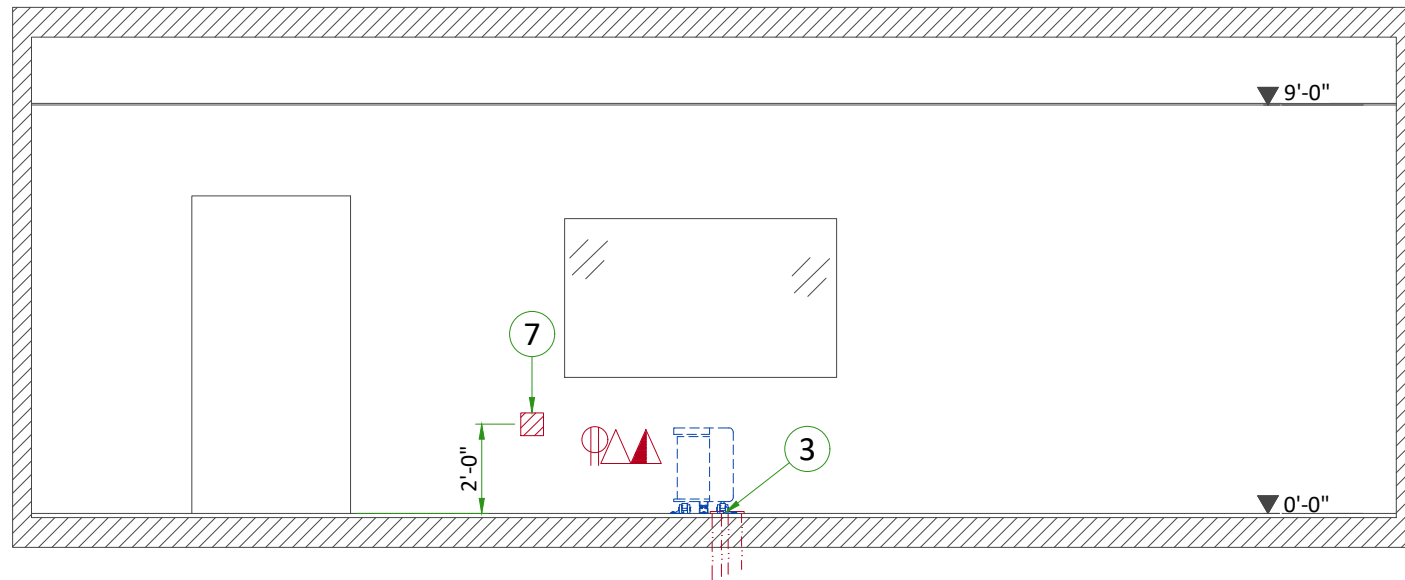
- All junction boxes, conduit, duct, duct dividers, switches, circuit breakers, cable tray, etc., are to be supplied and installed by customers electrical contractor. All junction boxes shall be provided with covers.
- Conduit and duct runs shall have gradual sweep radius bends.
- Conduits and duct above ceiling or below finished floor must be installed as near to ceiling or floor as possible to reduce run length.
- Ceiling mounted junction boxes illustrated on this plan must be installed flush with finished ceiling.
- All ductwork must meet the following requirements:
 1. Ductwork shall be metal with dividers and have removable, accessible covers.
 2. Ductwork shall be certified/rated for electrical power purposes.
 3. Ductwork shall be electrically and mechanically bonded together in an approved manner.
 4. PVC as a substitute must be used in accordance with all local and national codes.
- All openings in raceway and access flooring are to be cut out and finished off with grommet material by the customers contractor.
- Electrical contractor to provide measured pull strings in all conduit and raceway runs.
- Provide 10 foot pigtails at all junction points.
- Grounding is critical to equipment function and patient safety. Site must conform to wiring specifications shown on this plan.



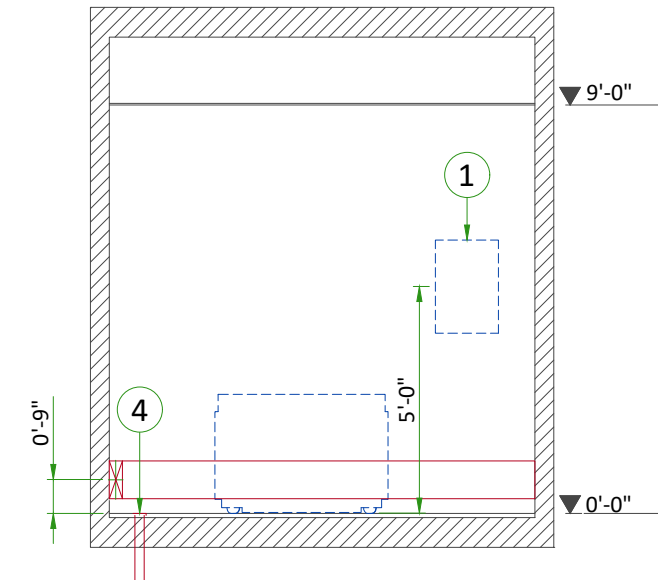
Item	Electrical Layout Item List
1	Main disconnect panel (MDP)
2	Suitable bushings & lock nuts (Gantry)
3	Suitable bushings & lock nuts (Operator's Console)
4	Suitable bushings & lock nuts (PARC)
5	Suitable bushings & lock nuts (Chiller)
6	6" x 6" x 4" [150 x 150 x 100] box above ceiling (injector)
7	6" x 6" x 4" [150 x 150 x 100] box (injector control/Operators Console)
8	3" [75] conduit below floor for water lines
9	2 1/2" [64] conduit below floor
10	3 1/2" [89] conduit below floor
11	4" x 4" x 4" [100 x 100 x 100] box (Partial UPS)
12	12" x 16" x 4" [300 x 400 x 100] box (Power Distribution Unit)
13	12" x 16" x 6" [300 x 400 x 150] box (Power Distribution Unit)
14	10" x 3 1/2" [250 x 100] surface wall duct with minimum 2 dividers
15	18" x 3 1/2" [450 x 100] surface wall duct with minimum 2 dividers (Chiller PDB)
16	Cable inlet above ceiling (Express Camera)

ITEM	QTY	Electrical Outlet Legend
Customer/contractor supplied and installed items unless otherwise specified. Height above floor determined by local codes unless otherwise specified.		
△		Dedicated telephone line(s)
▲		Network outlet
⊕		Duplex hospital grade, dedicated wall outlet 120-v, single phase power
⊔		System emergency off (SEO), (recommended height 1.2m [48"] above floor)
⊗		X-Ray room warning light control panel
⊙		X-Ray ON lamp (L1) - 24V
◇		Door interlock switch (needed only if required by state/local codes)

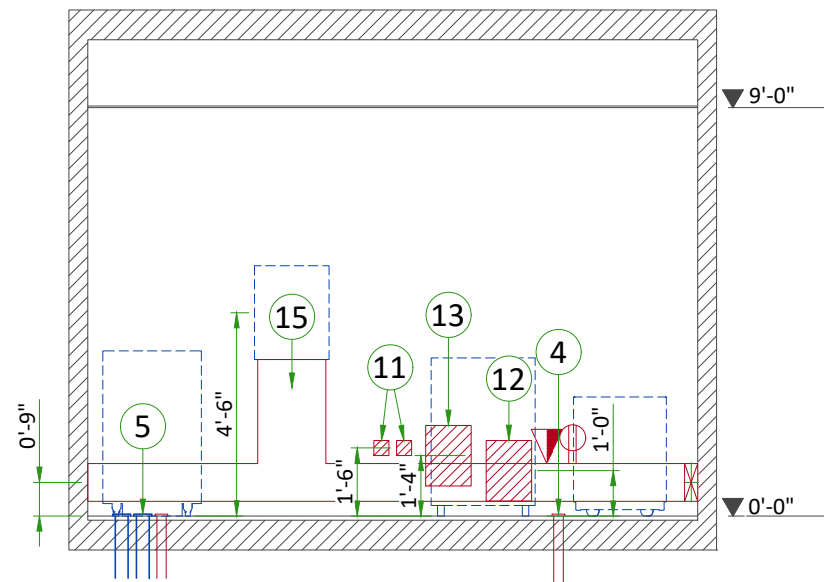
Additional Conduit Runs (Contractor Supplied and Installed)					
From (Bubble # / Item)	To (Bubble # / Item)	Qty	Size		
			In.	mm	
3 Phase Power	1 Main Disconnect Panel	1	As req'd	As req'd	
1 Main Disconnect Panel	Emergency Off	1	1/2	13	
	12 Power Distribution Unit	1	As req'd	As req'd	
12 Power Distribution Unit	Door Switch	1	1/2	13	
	Warning Light	Warning Light Control	1	1/2	13
1			1/2	13	
16 Express Camera	7 Operator's Console	1	1 1/2	38	
1 Main Disconnect Panel	11 Partial UPS	1	1 1/4	30	
12 Power Distribution Unit		1	2	50	
6 Injector	7 Injector Control	1	2 1/2	64	



A



B



C

POWER REQUIREMENTS

POWER SUPPLY

POWER SUPPLY	3 PHASES+G 380V/400V/420V/440V/460V/480V ±10%
FREQUENCIES	50/60Hz ± 3Hz
POWER FACTOR	0.85
MAXIMUM POWER DEMAND	100 kVA (Total Body upgrade: up to 140 kVA)
AVERAGE POWER	30 kVA

- Power supply should come into a Main Disconnect Panel (MDP) containing the protective units and controls.
- Governing electrical codes may require a neutral wire. If present, neutral must be terminated in MDP.
- The section of the supply cable should be calculated in accordance with its length and the maximum permissible voltage drops, equal to 3.4% max. of regulation for feeder size.
- There must be discrimination between supply cable protective material at the beginning of the installation (main low-voltage transformer side) and the protective devices in the MDP.
- TNC neutral point connection must not be used.

SUPPLY CHARACTERISTICS

- Power input must be separate from any others which may generate transients (elevators, air conditioning, radiology rooms equipped with high speed film changers...).
- All equipment (lighting, power outlets, etc...) installed with GEHC system components must be powered separately.
- The minimum recommended size for a dedicated distribution transformer is: 125 kVA, rated 2.4% regulation at unity power factor.
- Phase imbalance 2% maximum.
- Maximum voltage variation at full load 6% (Including line impedance).
- Transients must be less than 1500V peak. (on a 380V line)
- A record of power input disturbances over a continuous two-weeks period (prior to delivery) enables determination of the frequency and degree of these disturbances and can be used to ascertain the need to provide line conditioning equipment.

GROUND SYSTEM

- System of equipotential grounding.
- Equipotential: The equipotential link will be by means of an equipotential bar. This equipotential bar should be connected to the protective earth conductors in the ducts of the non GEHC cableways and to additional equipotential connections linking up all the conducting units in the rooms where GEHC system units are located.
- The impedance of the earth bar should be less than or equal to 2 Ω (ohm).

CABLES

- Power and cable installation must comply with the distribution diagram.
- All cables must be isolated and flexible of HO7RNF type, cable color codes must comply with standards for electrical installation.
- The cables from signaling and remote control (Y,SEO,L...) will go to the MDP with a pigtail length of 1.5m [5 ft], and will be connected during installation. Each conductor will be identified and isolated (screw connector).

CABLEWAYS

The general rules for laying cableways should meet the conditions laid down in current standards and regulations, with regard to:

- Protecting cables against water (cableways should be waterproof).
- Protecting cables against abnormal temperatures (proximity to heating pipes or ducts).
- Protecting cables against temperature shocks.
- Replacing cables (cableways should be large enough for cables to be replaced).
- Metal cableways should be grounded.

POWER DISTRIBUTION

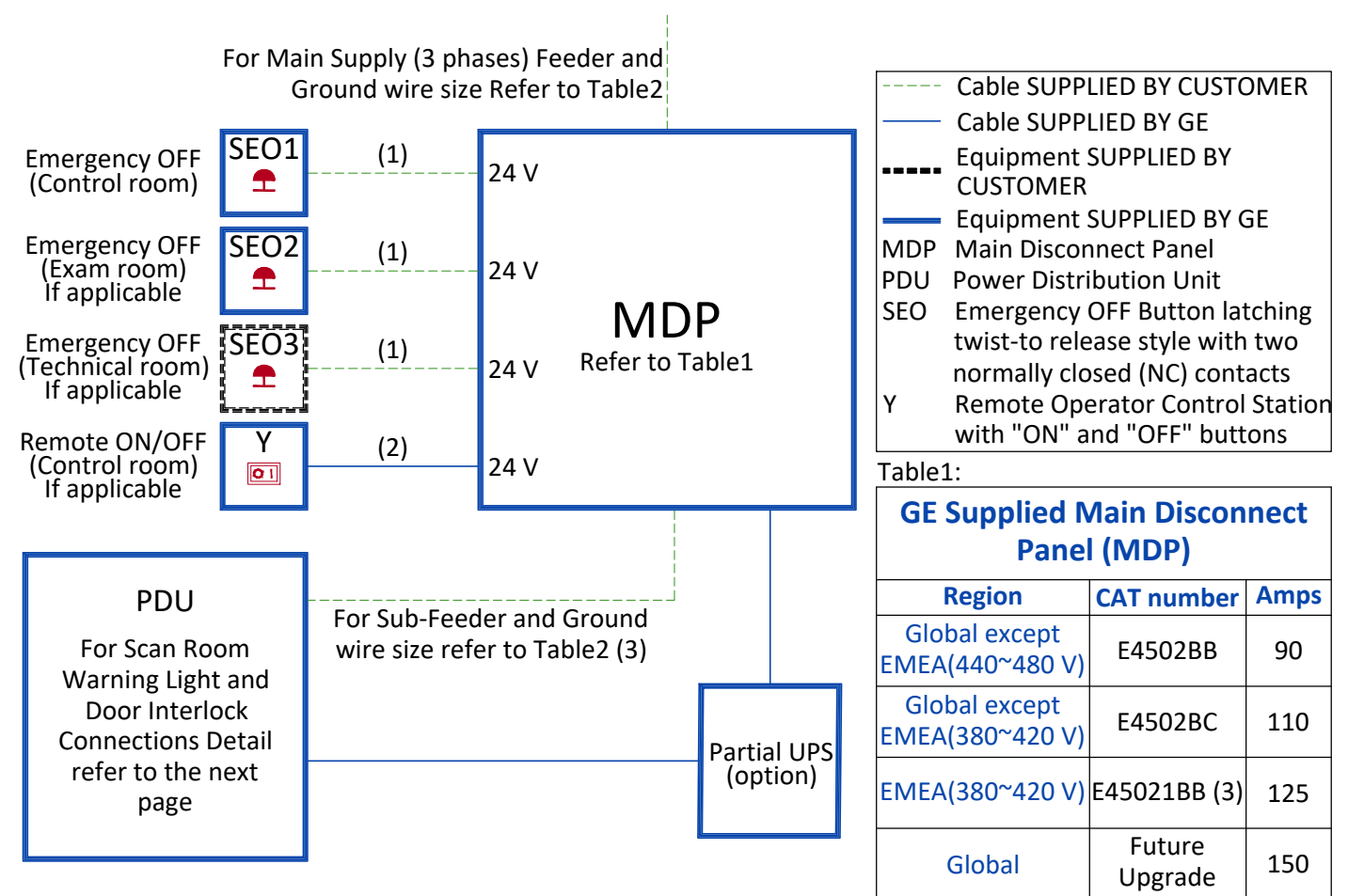


Table2:

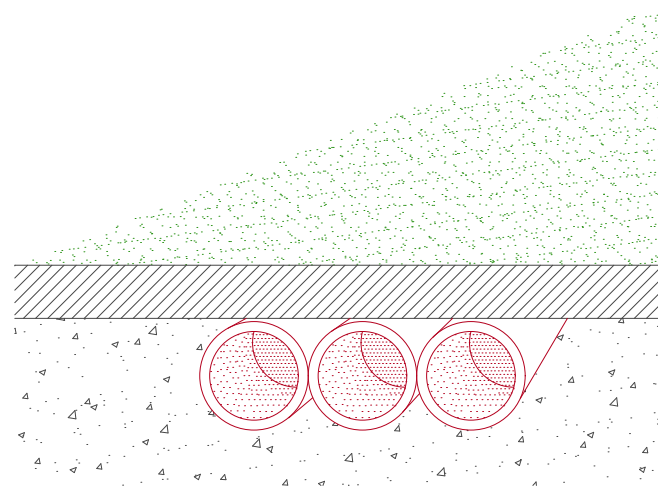
Feeder Table						
The information below assumes the use of copper wire, rated 75 C and run in steel conduit. All ampacity is determined in accordance with the National Electrical Code (NFPA 70), Table 310-16 (2002). The ampacity of the circuit protection device listed above determines the minimum feeder size, except where total source regulation limits require a larger size. If the wire size does not match the lists below, please select the nearest wire size as per to local standards.						
Feeder length from Power Substation to MDP - ft (m)	Minimum Wire Size, AWG or MCM (mm ²)/VAC					
	380 VAC	400 VAC	420 VAC	440 VAC	460 VAC	480 VAC
50 (15)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
100 (30)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
150 (46)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
200 (61)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
250 (76)	1 (45)	1 (45)	2 (35)	2 (35)	2 (35)	3 (30)
300 (91)	1/0 (50)	1/0 (50)	1 (45)	1 (45)	2 (35)	2 (35)
350 (107)	2/0 (70)	1/0 (50)	1/0 (50)	1 (45)	1 (45)	1 (45)
400 (122)	2/0 (70)	2/0 (70)	1/0 (50)	1/0 (50)	1/0 (50)	1 (45)
Sub-Feeder length from MDP to PDU - ft (m)						
32 (9.7536)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
Grounding						
Run a dedicated 1/0 [50 mm ²] or larger insulated copper ground wire from the power source to the MDP and from MDP to the PDU. Run the ground wire in the same raceway with the three-phase wires.						

Notes :

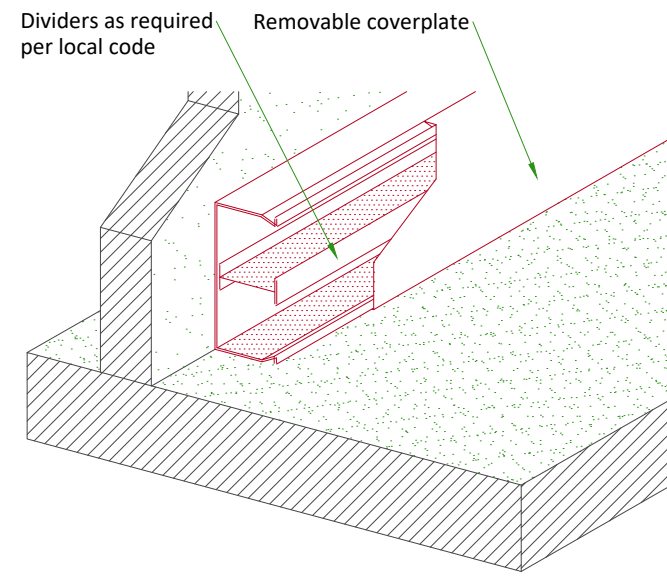
- Wire size: 4x2mm² [14AWG] and 1x2mm² [14AWG] GND
- Power control cable: 3 m [10 ft], multi-conductor, 24V DC
- GE supplied MDP option E45021BB includes a 10 meter long power cable (HO7RN-F) with wire size 4x50mm² and a 50 meter long control cable with wire size 2x1.5mm²

TYPICAL CABLE MANAGEMENT

CONDUIT IN THE FLOOR

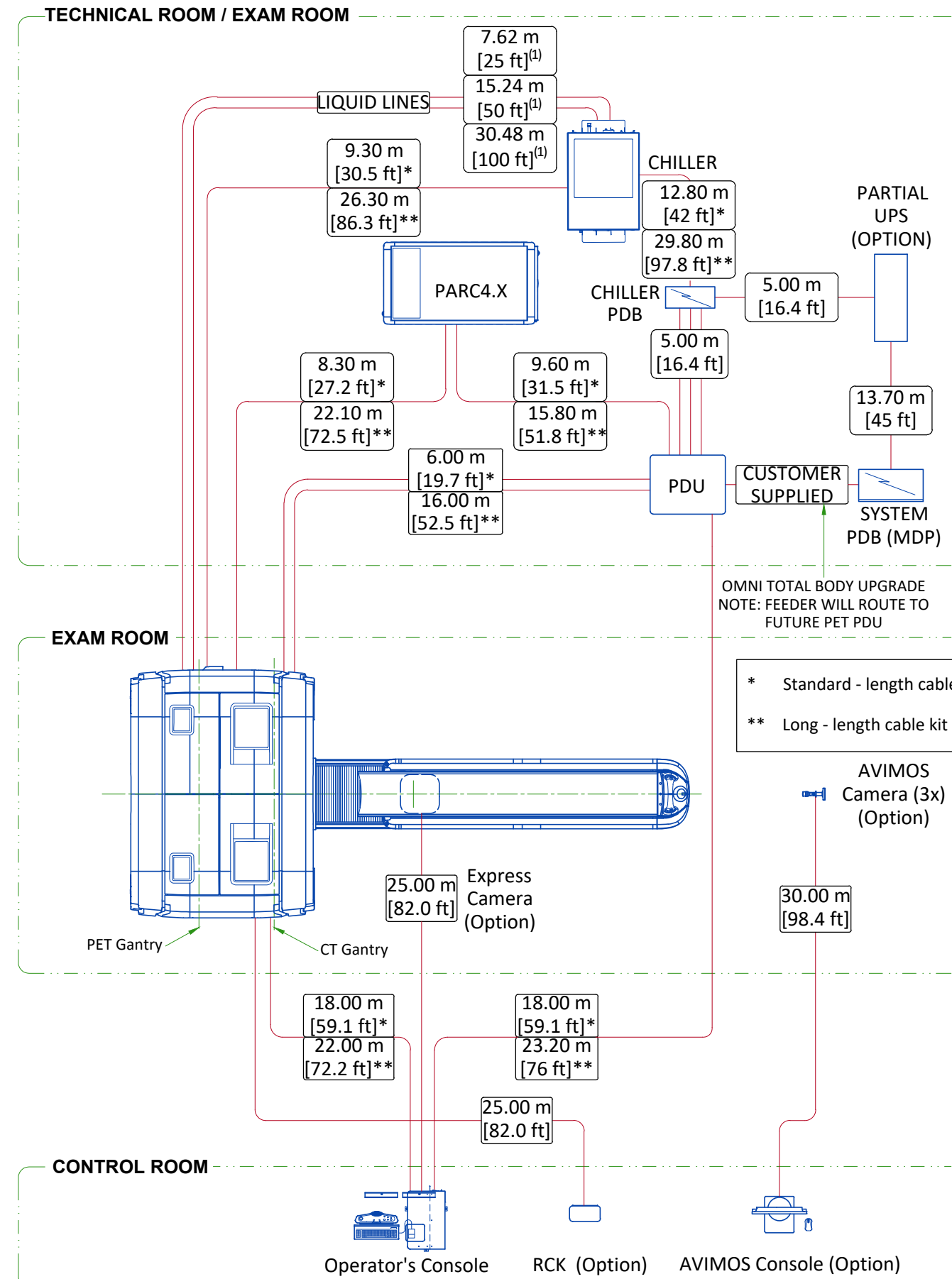


DUCT ON THE WALL

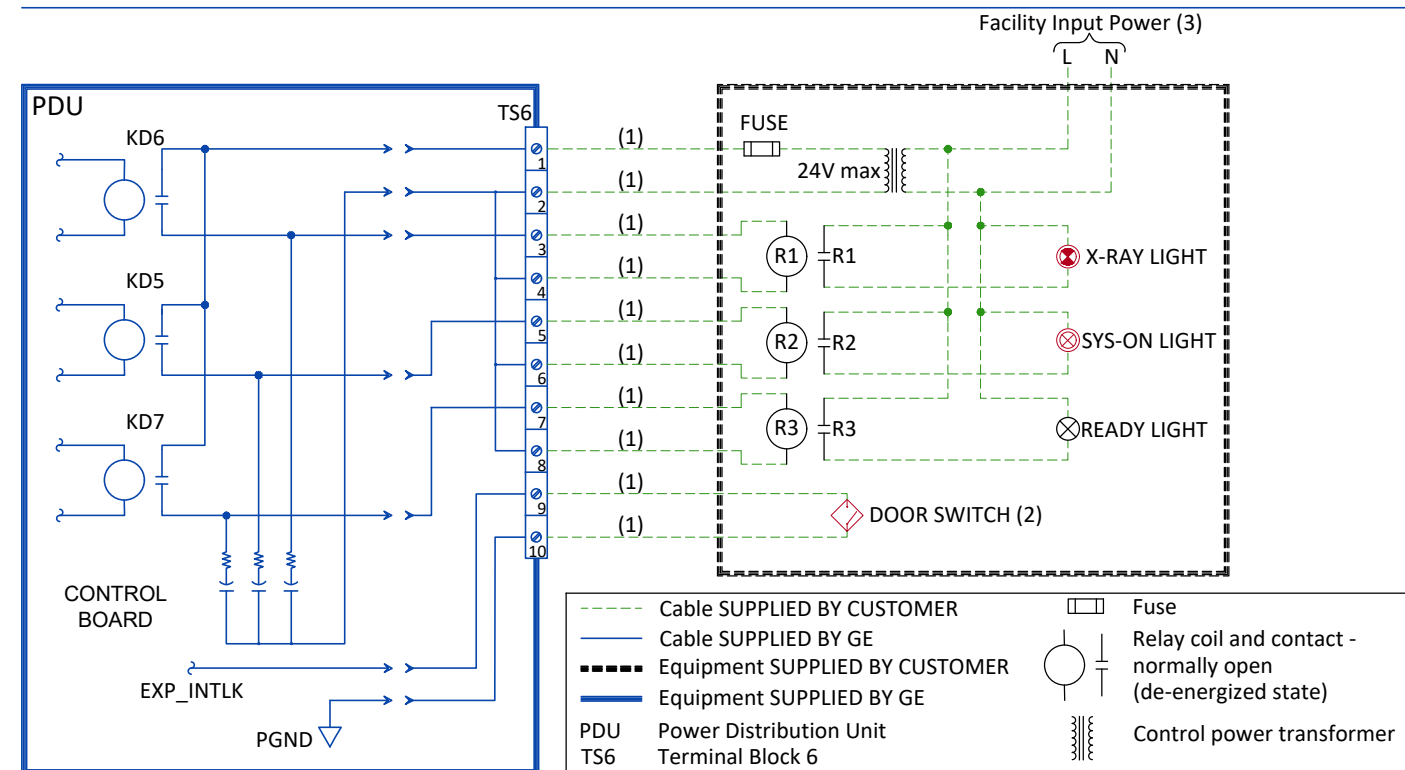


NOT TO SCALE

INTERCONNECTIONS



SCAN ROOM WARNING LIGHT AND DOOR INTERLOCK



- Notes :
- (1) Wire size: 2mm² [14 AWG] at 24V
 - (2) Door Interlock circuit is jumpered out if a door switch is not provided.
 - (3) Grounding not shown on the detail, but must comply with local codes.

⁽¹⁾- Length based on sales configuration divided on short, medium and long options.