REV	DATE	MODIFICATIONS

Typical

---

01 - C1 - Cover Sheet
02 - C2 - Disclaimer - Site Readiness
03 - A1 - General Notes
04 - A2 - Equipment Layout
05 - A3 - Movement Layout
06 - A4- Section Views
07 - A5 - Equipment Details (1)
08 - A6 - Equipment Details (2)
09 - A7 - Delivery
10 - S1 - Structural Notes
11 - S2 - Structural Layout
12 - S3 - Structural Details (1)
13 - S4 - Structural Details (2)
14 - S5 - Structural Details (3)
15 - S6 - Structural Details (4)

16 - M1 - HVAC
17 - E1 - Electrical Notes
18 - E2 - Electrical Layout
19 - E3 - Electrical Elevations
20 - E4 - Electrical Details
21 - E5 - Power Requirements
22 - E6 - Interconnections
23 - E7 - Light Signaling
24 - E7 - Power requirements (Light Signaling)

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.
Pre Installation documents for GE HealthCare products can be accessed on the web at: *https://www.gehealthcare.com/support/manuals*

GE HealthCare

DISCOVERY IGS 7 WITH AUTORIGHT FINAL STUDY

Drawn by	Verified by	Concession	GON/Quote	PIM Manual	Rev
RET	TST	-	-	5813615-8EN	4

Format	Scale	File Name	Date	Sheet
A3	1/4"=1'-0"	EN-VAS-TYP-IGS-7-AR-NF.DWG	04/Dec/2025	01/24

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 structrual 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.

ALL DETAILS OF EQUIPMENT AND TECHNICAL DATA ARE SUBJECT TO CHANGE.

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

CUSTOMER SITE READINESS REQUIREMENTS

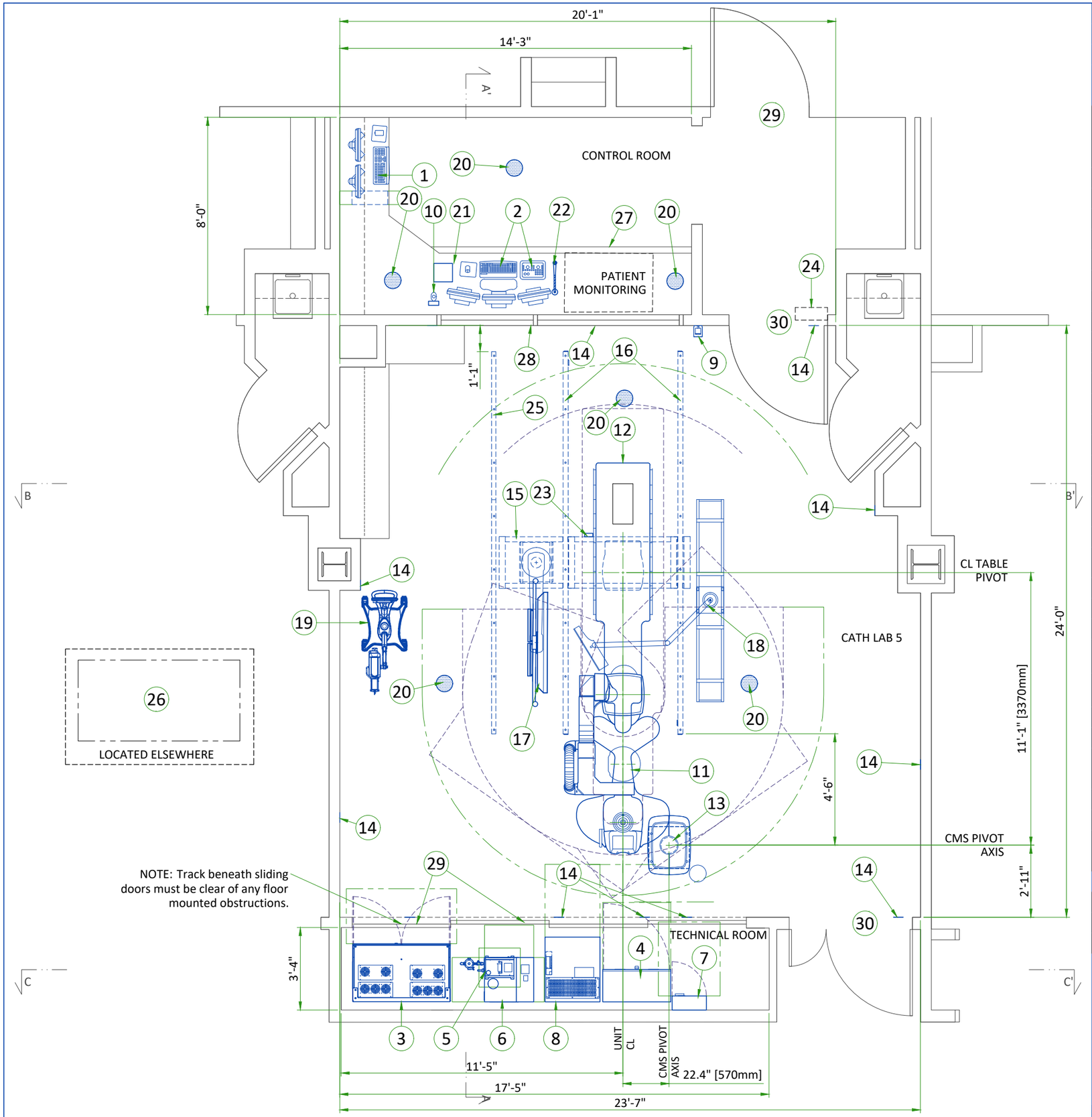
REQUIRED MANUALS FOR SYSTEM PRE-INSTALLATION	
Description	**Document Number***
Product specific Pre-installation Manual	Refer to cover page
*documents can be accessed in multiple languages at *https://www.gehealthcare.com/support/manuals*	

- 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 **DOC2949062** 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)

ELECTROMAGNETIC INTERFERENCE

The IGS System is intended for use in the electromagnetic environment specified below.
The Customer or the user of the System should assure that it is used in such an environment.

EMISSIONS	TEST COMPLIANCE	ELECTROMAGNETIC ENVIRONMENT
Radio–Frequency Emissions CISPR11	Group1 Class A limits	The IGS System uses Radio Frequency energy only for its internal function.Therefore, its Radio Frequency emissions are very low and are not likely to cause any interference in nearby electronic equipment.
		The IGS System is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000–3–2	Not applicable	The IGS System is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Voltage fluctuations/ flicker emissions IEC 61000–3–3	Not applicable	The IGS System is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.



LEGEND

A	GE SUPPLIED	D	AVAILABLE FROM GE
B	GE SUPPLIED/CONTRACTOR INSTALLED	E	EQUIPMENT EXISTING IN ROOM
C	CUSTOMER/CONTRACTOR SUPPLIED AND INSTALLED	*	ITEM TO BE REINSTALLED FROM ANOTHER SITE

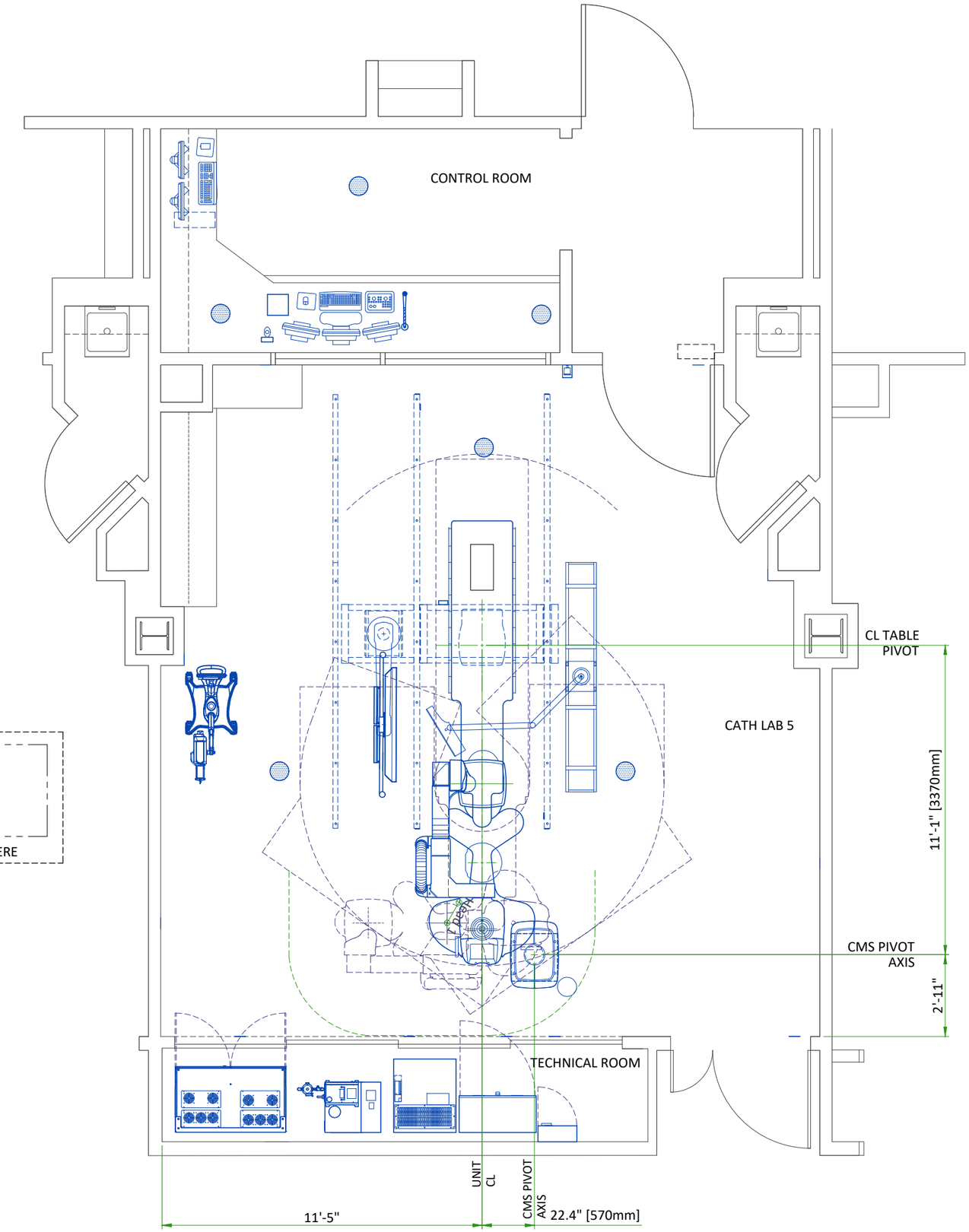
BY	ITEM	DESCRIPTION	MAX HEAT OUTPUT (BTU/h)	WEIGHT (lbs)	MAX HEAT OUTPUT (W)	WEIGHT (kg)
A	1	ADVANTAGE WORKSTATION (AW)	3412	70	1000	31.7
A	2	OPERATOR CONSOLE	341	45	100	20.2
A	3	C-FRT CABINET	7370	1230	2160	558
A	4	SYSTEM INTERFACE CABINET	1706	642	500	291
A	5	DETECTOR CONDITIONER	717	32	210	14.6
A	6	COOLIX 4100 CONDITIONER	23645	265	6930	120
B	7	MAIN DISCONNECT PANEL (MDP)	-	49	-	22
A	8	FLUORO UPS UL	7302	1169	2140	530
A	9	XRAY BUZZER	-	2	-	1
A	10	BOLUS CHASE HANDSWITCH	-	2	-	1
A	11	GANTRY	-	2205	-	1000
A	12	TILTING TABLE	-	2242	-	1017
A	13	CABLE MANAGEMENT SYSTEM (CMS)	-	-	-	-
A	14	POSITIONING TARGETS (x11)	-	-	-	-
A	15	MONITOR SUSPENSION SHORT BRIDGE	-	225	-	102
A	16	MONITOR SUSPENSION RAILS (x2)	-	139	-	63
A	17	LARGE DISPLAY MONITOR WITH TWO BACKUP MONITORS	341	598	100	271.4
A	18	MAVIG RAD SHIELD 2500MM TRACK	-	-	-	-
A	19	MARK 7 ARTERION INJECTOR ON PEDESTAL	-	182	-	82.5
B	20	VITALINQ SPEAKER (x6)	-	-	-	-
B	21	VITALINQ CONSOLE	-	-	-	-
B	22	VITALINQ MICROPHONE	-	-	-	-
B	23	VITALINQ MICROPHONE (ONE ON MONITOR BRIDGE IN EXAM ROOM)	-	-	-	-
D	24	ELECTRICAL BOX (LIGHT SIGNALING - NOT SUPPLIED BY GE)	-	-	-	-
A	25	CABLE DRAPE RAIL	-	-	-	-
C	26	1000 x 2000 [39.4" x 78.7"] AREA REQUIRED FOR SYSTEM TOOLS AND DOCUMENTATION				
C	27	COUNTER TOP FOR EQUIPMENT- PROVIDE GROMMETED OPENINGS AS REQUIRED TO ROUTE CABLES				
C	28	CONTROL WALL TO CEILING WITH LEAD GLASS VIEWING WINDOW				
C	29	DOORS TO BE EASILY REMOVABLE AND CLEAR OF ANY FLOOR MOUNTED OBSTRUCTIONS				
C	30	MINIMUM OPENING FOR EQUIPMENT DELIVERY IS 1280mm x 2200mm [50.4 in x 87 in], CONTINGENT ON A 2438mm [96 in] CORRIDOR WIDTH				

EXAM ROOM HEIGHT	
FINISHED FLOOR TO SLAB HEIGHT	T.B.D.
FALSE CEILING HEIGHT	10'-0"

Note:
- Reflectors to be located above cabinet top; minimum height from finished floor 80.7" [2.05m]
- Ensure the surfaces to be non-reflective and non-mobile for the positioning targets

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

MOVEMENT LAYOUT



PARKING POSITIONS

NAME	RIRP* 1508		FEASIBLE DISTANCE	PROPOSED
	min	max		
Park Head 1	500	3930		YES
Park Left 2	500	4080		
Park Right 2	500	3680		

A maximum of two parking positions can be selected.

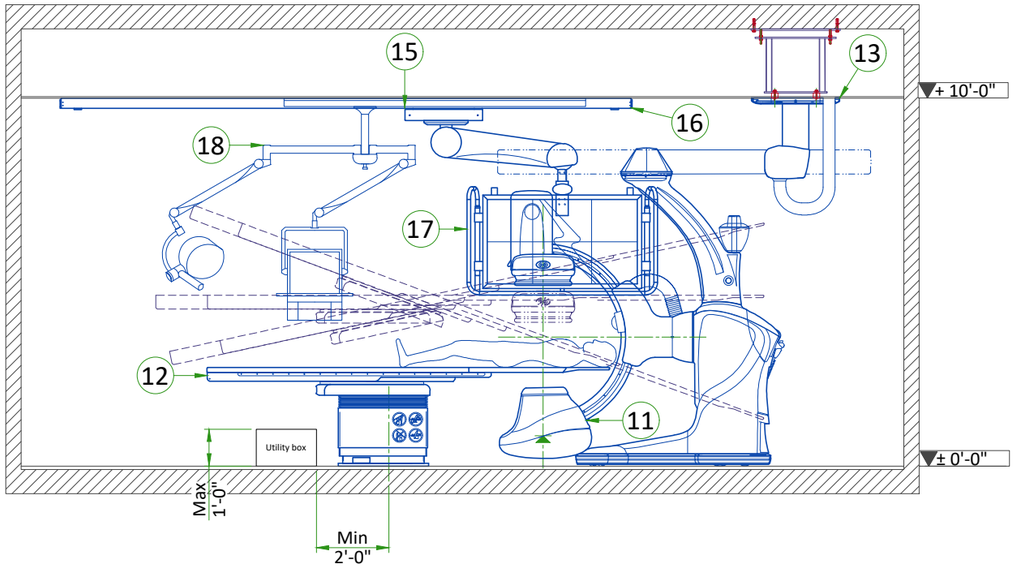
BACKOUT POSITIONS

TYPE	NAME	RIRP* 1508		TYPICAL
		min	max	
Backouts	**Head Long**	500	4310	1200
	Head Left	500	2700	2700
	Head Right	500	3600	2700
	Left 1	500	4310	1200
	Right 1	500	4310	1200

* RIRP: Room Interventional Reference Point

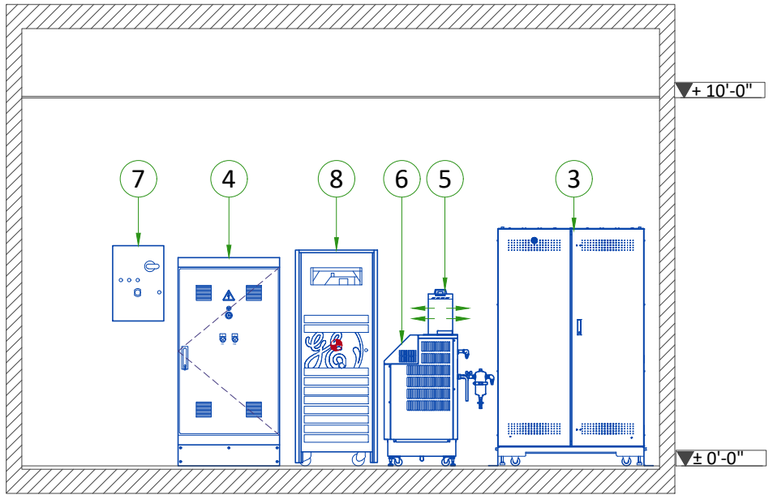
EXAM ROOM VIEW

SECTION A-A'



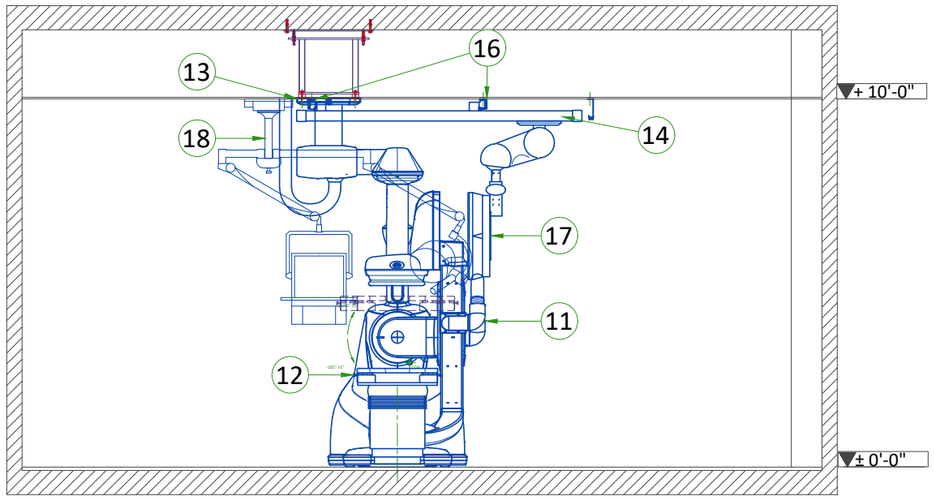
TECHNICAL ROOM VIEW

SECTION C-C'



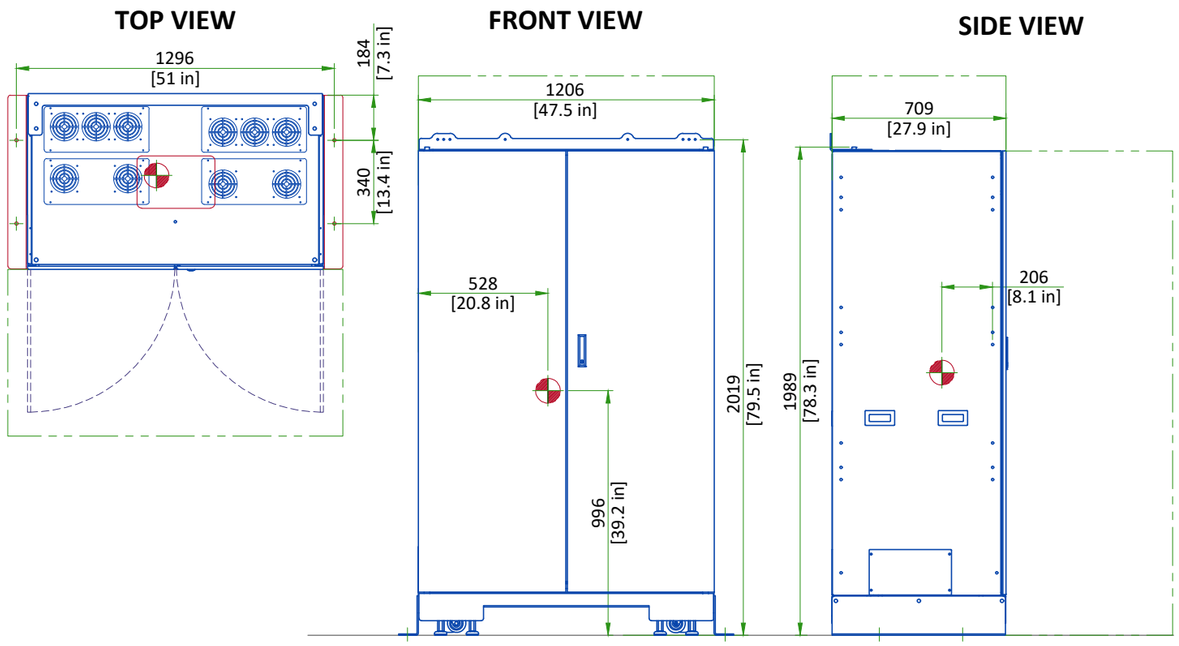
EXAM ROOM VIEW

SECTION B-B'



The ballons in the sections are the same as in the description in the equipment layout (page A2)

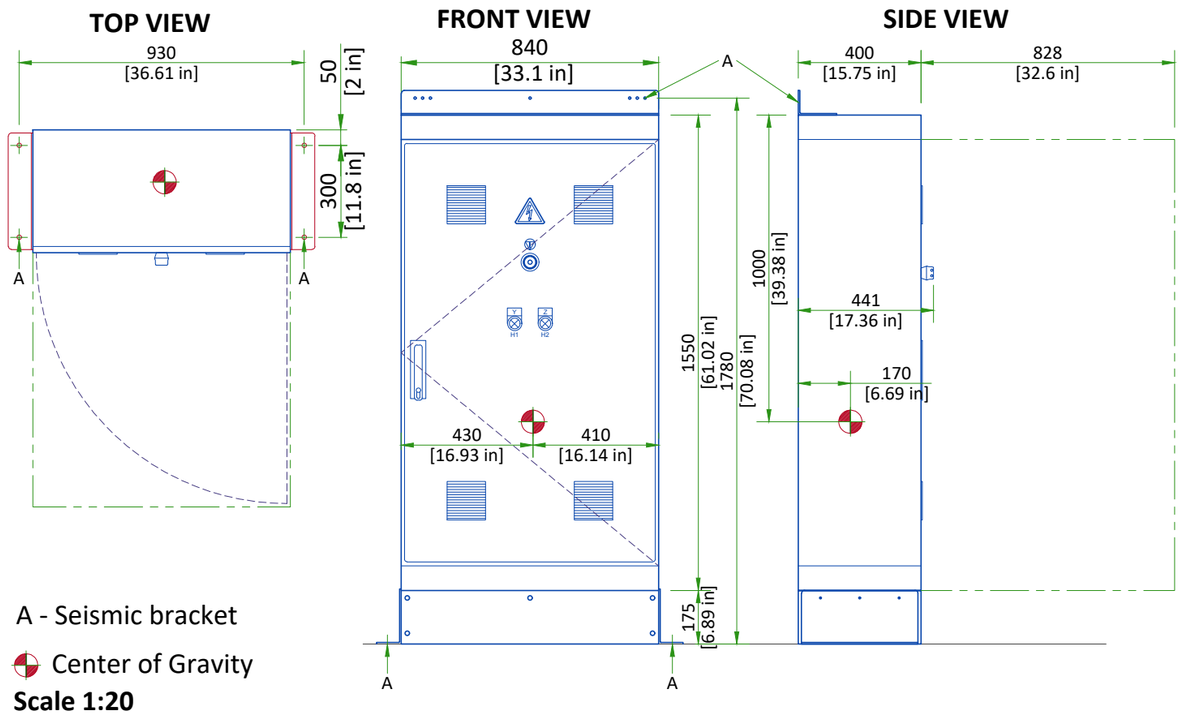
C-FRT CABINET



Center of Gravity

SCALE 1:25

SYSTEM INTERFACE CABINET

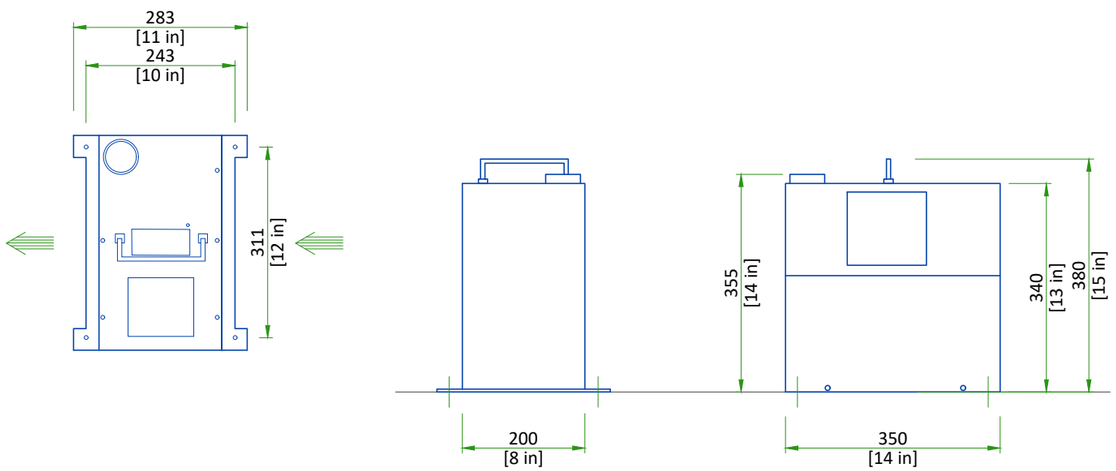


A - Seismic bracket

Center of Gravity

Scale 1:20

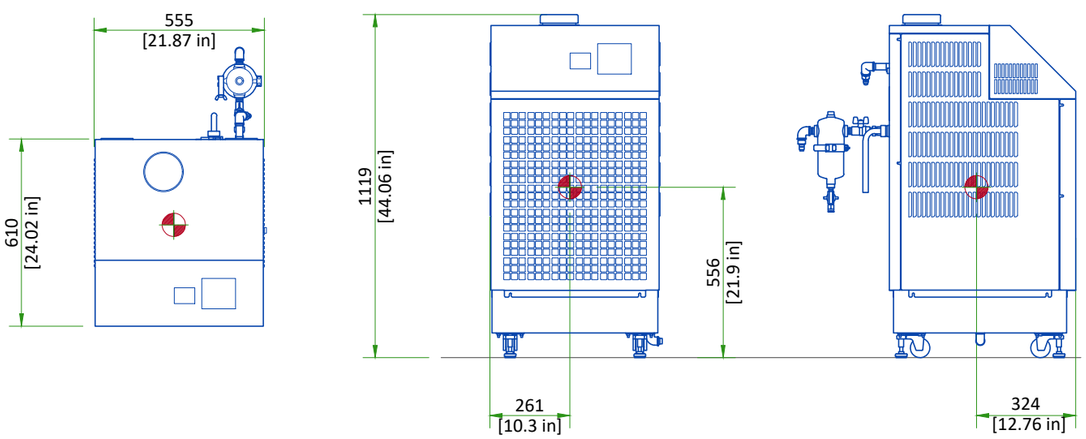
DETECTOR CONDITIONER



Indicates air flow

Scale 1:10

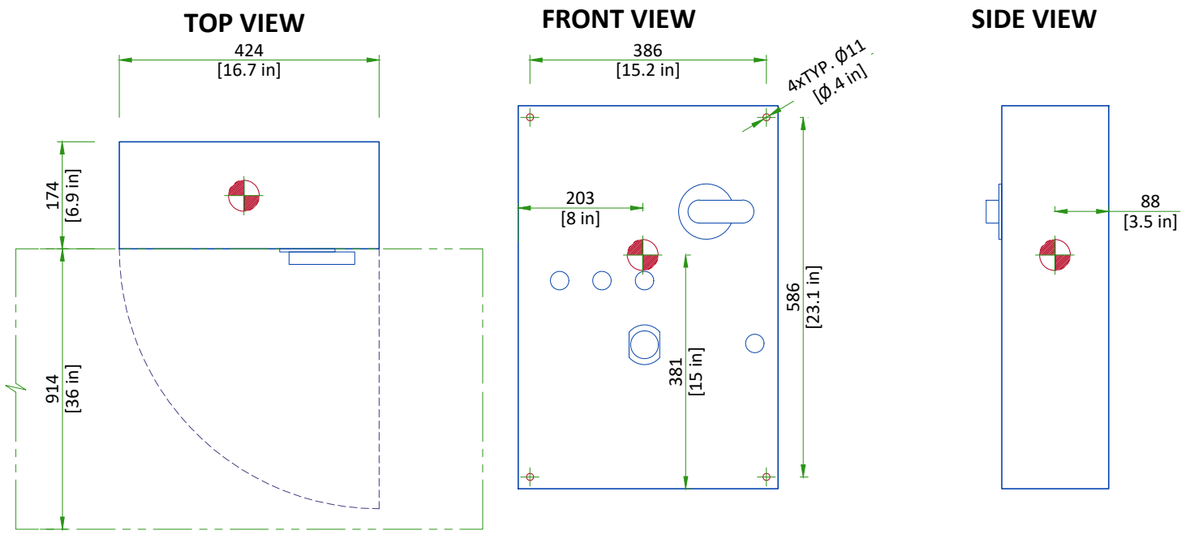
X-RAY TUBE CONDITIONER



Center of Gravity

Scale 1:20

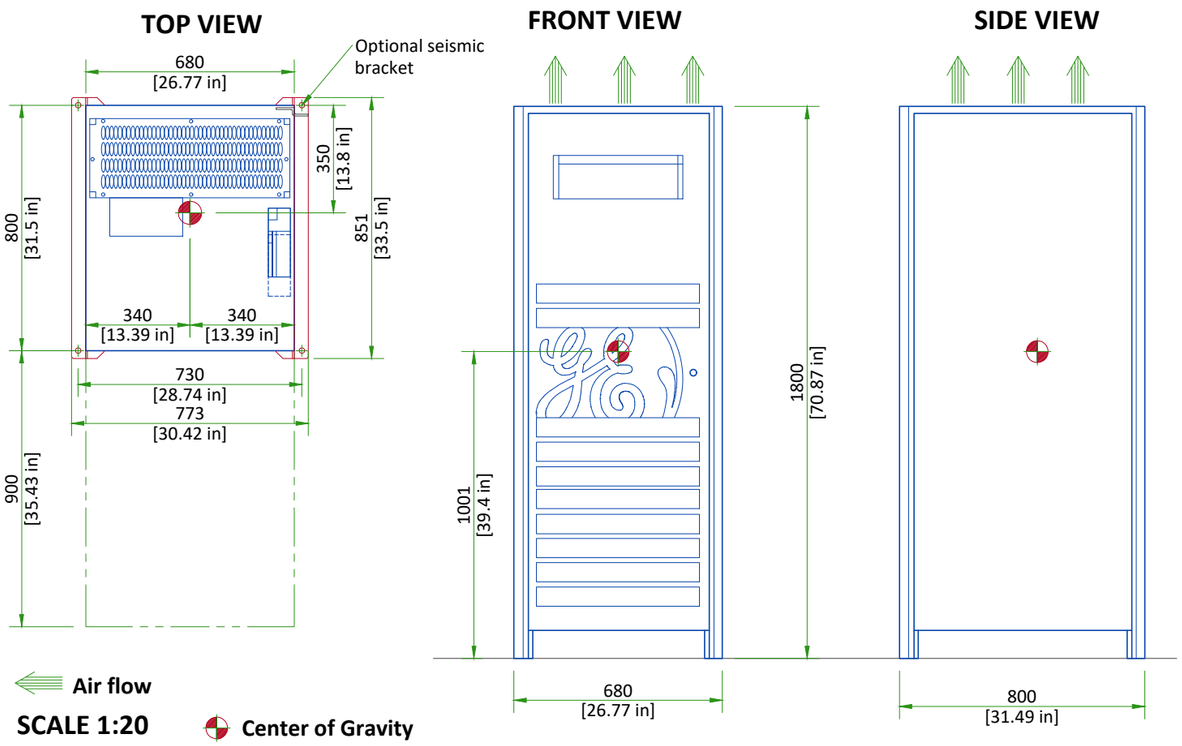
MAIN DISCONNECT PANEL



Center of Gravity

Scale 1:10

20kVA FLURO UPS



Air flow

SCALE 1:20

Center of Gravity

DELIVERY

THE CUSTOMER/CONTRACTOR SHOULD:

- Provide an area adjacent to the installation site for delivery and unloading of the GE equipment.
- Ensure that the dimensions of all doors, corridors, ceiling heights are sufficient to accommodate the movement of GE 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.

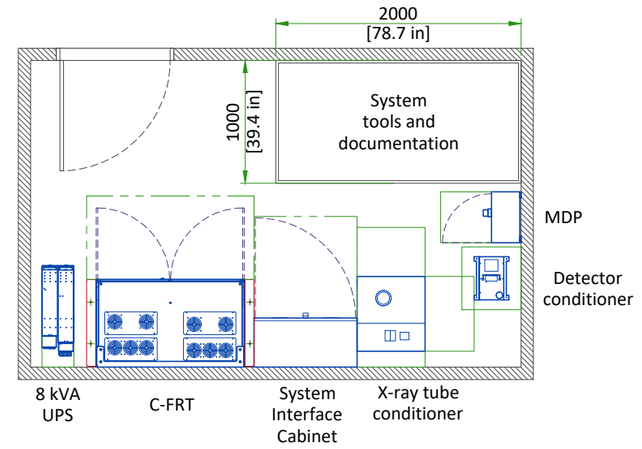
DIMENSIONS OF DELIVERY

EQUIPMENT	DIMENSIONS			WEIGHT	
GANTRY (SHIPPING DOLLY)	LENGTH	2890 mm	113.7 in	1100 kg	2425 lb
	WIDTH	1410 mm	55.5 in		
	HEIGHT	2060 mm	81.1 in		
TILTING TABLE (ON PALLET)	LENGTH	2150 mm	84.6 in	700 kg	1534 lb
	WIDTH	1000 mm	39.4 in		
	HEIGHT	1160 mm	45.7 in		
CMS PALLET ASSEMBLY (WITHOUT SHIPMENT PACKAGING)	LENGTH	1812 mm	71.3 in	-	-
	WIDTH	923 mm	36.3 in		
	HEIGHT	1465 mm	57.7 in		
C-FRT CABINET (ON PALLET)	LENGTH	850 mm	34 in	632 kg	1393 lb
	WIDTH	1500 mm	59 in		
	HEIGHT	2200 mm	87 in		

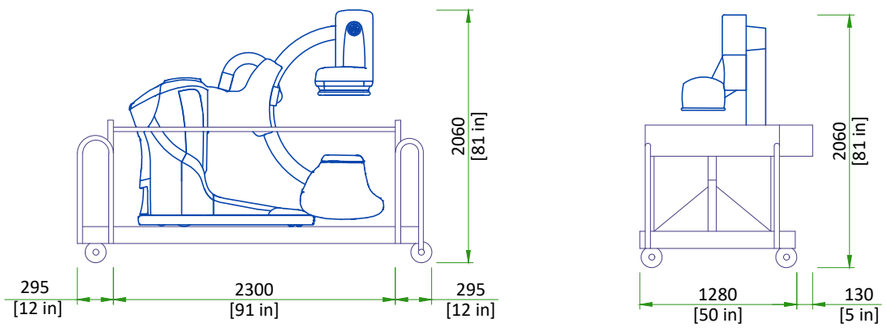
RECOMMENDED AREA IN THE TECHNICAL ROOM

THE TECHNICAL ROOM NEED EXTRA SPACE FOR TOOLS AND DOCUMENTATION

- GE recommend an extra area of 2.0 x 1.0 m (78.7 x 39.4 in) for storage of tools and documentation for the system
- This area doesn't need to be inside the technical room, but in a closer space from the system



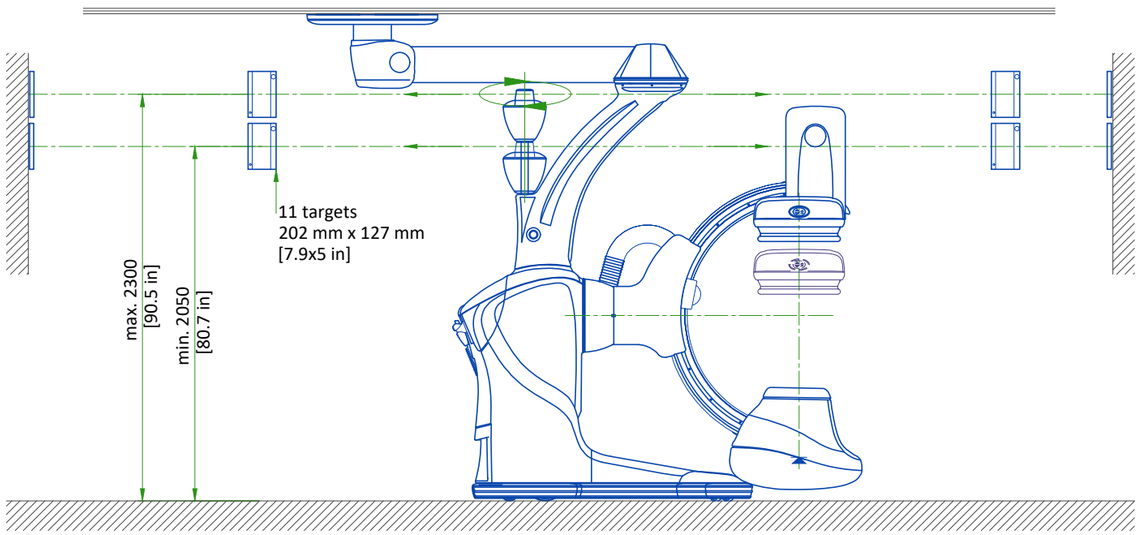
SHIPPING DOLLY FOR DISCOVERY GANTRY



DIMENSIONS

	HEIGHT	WIDTH	LENGTH
Full configuration	2060 mm [81.1 in]	1410 mm [55.5 in]	2890 mm [113.7 in]
Left top handle removed and right top handle inside	2060 mm [81.1 in]	1280 mm [50.4 in]	2890 mm [113.7 in]
Short lifts configuration	2120 mm [83.5 in]	1280 mm [50.4 in]	2300 mm [90.5 in]
No dolly configuration	2000 mm [78.7 in]	1260 mm [49.6 in]	2150 mm [84.6 in]
NOTE	Dolly can be removed to facilitate movement of Discovery gantry in the hospital only. However, if moving the gantry without shipping dolly, there is a risk of damaging the floor surface.		

POSITIONING TARGETS



NOTE
The minimum distance between two targets is 400 mm [15.7 in] center to center.
The maximum angle between two adjacent targets is 70°.
The targets are mounted at the time of the gantry installation.
Targets should be visible to the laser source of the AGV:

- Shouldn't be mounted on movable surface (door, window, etc.).
- Shouldn't be mounted on a surface that could be hidden in operation by door or movable component.
- Shouldn't be mounted on or near a reflective surface.

STRUCTURAL NOTES

- All steel work and parts necessary to support ceiling mounted tube hanger or other equipment are to be supplied by the customer or his contractors. The structural support should run continuous with no fittings extending below face of structural support channel, run wall to wall, be parallel, square and in the same horizontal plane flush with finished ceiling. The system is to be cross braced vertically, horizontally and diagonally to allow no movement and a maximum of 1,58mm [1/16"] deflection. **12.7mm [1/2"] dia. x 38.1mm [1 1/2"] long bolts with unistrut 12.7mm [1/2"] nuts with springs are to be provided by customer or his contractors for each stationary and auxillary support rail. Closure strips shall be provided for areas of unistrut exposed and without mounting units.**

- 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.

- Control walls with tube hanger passage above shall be constructed to 2130mm [7'-0"] high.

- Dimensions are to finished surfaces of room.

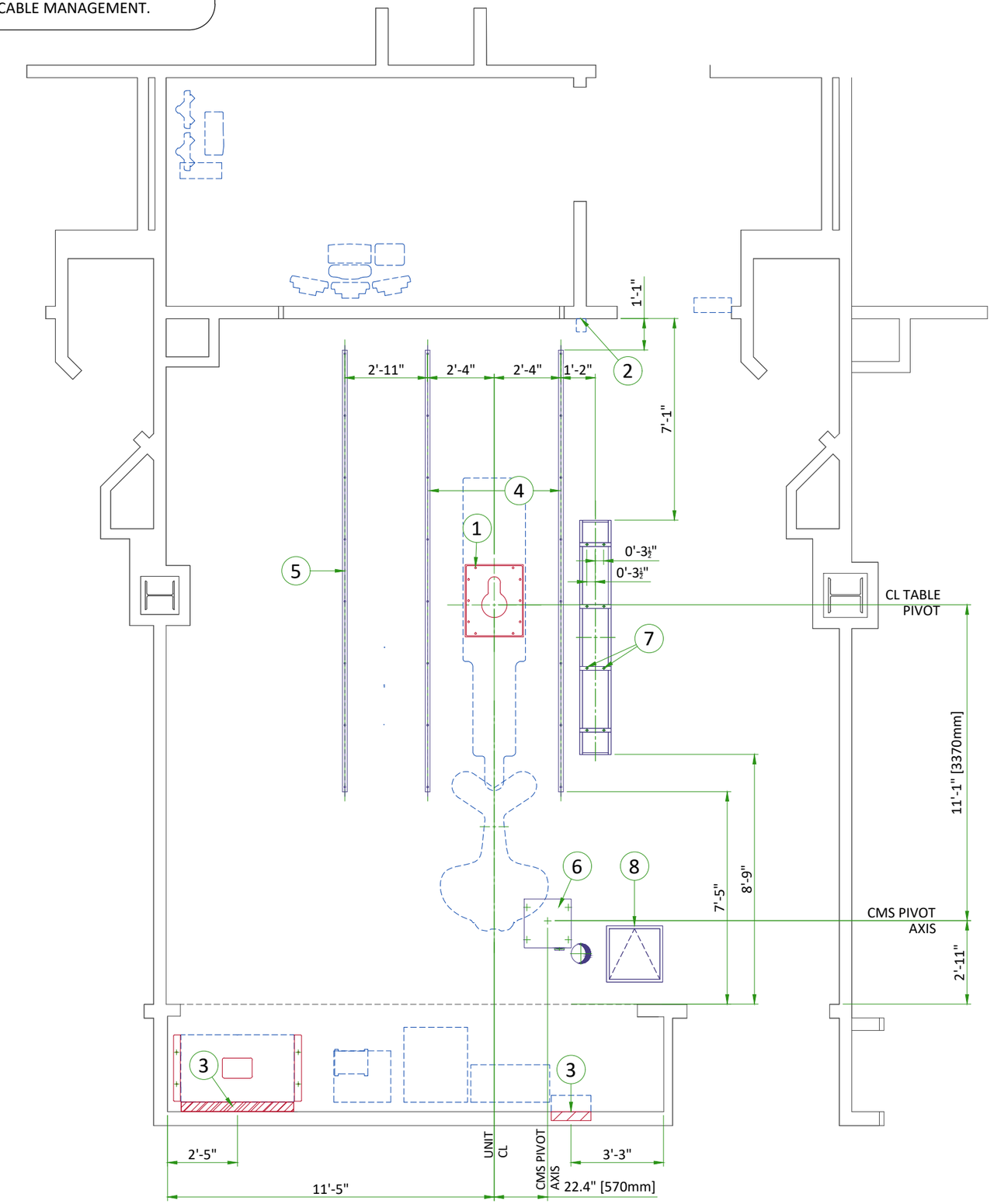
- Customers contractor must provide all penetrations in post tension floors.

- Customers contractor must provide and install any non-standard anchoring. Documents for standard anchoring methods are included with GEHC 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 GEHC 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, GEHC installers will perform surface penetration operations only after the customer's validation and completion of the "GEHC surface penetration permit"

IF ACCESS IS NOT READILY AVAILABLE IT IS RECOMMENDED TO PROVIDE A TRAPDOOR IN THE CEILING TO ALLOW SERVICE ACCESS FOR CABLE MANAGEMENT.



STRUCTURAL LAYOUT ITEM LIST	
(GE SUPPLIED / CONTRACTOR INSTALLED)	
1	Area occupied by GE supplied table baseplate
2	Mount X-Ray buzzer bracket on wall below ceiling
(CUSTOMER SUPPLIED / CONTRACTOR INSTALLED)	
3	Support backing, locate as shown.
4	Structural support in ceiling for fastening ceiling supported equipment. Supports to run continuous with no fittings extending below face of channel, run wall to wall, be parallel, square, and in the same horizontal plane, flush with the finished ceiling. Rails are mounted to these supports every 2'-2" and require 350 lbs. (597 lbs. In seismic regions) per bolt load. Methods of support that permit attachment to structural steel or through bolts in concrete should be favored. Do not use screw anchors in direct tension.
5	>>Components flush with ceiling<< Structural support in ceiling for fastening cable drape rail. Supports to run continuous with no fittings extending below face of channel, run wall to wall, be parallel, square, and in the same horizontal plane, flush with the finished ceiling. Rails are mounted to these supports every 2'-2" and require 50 lbs. Per bolt load. Methods of support that permit attachment to structural steel or through bolts in concrete should be favored. Do not use screw anchors in direct tension.
6	Customer supplied plate (250x503 [20.5"x19.8"])
7	Structural supports for fastening the overhead counterpoised suspension. Support to be located as shown. Suspension boom requires 102 lbs/bolt support. 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.
8	600 x 600 [24" x 24"] Service access in ceiling

FLOOR SPECIFICATION

IMPORTANT

THE FLOOR SYSTEM COMPATIBLE WITH THE DISCOVERY IGS EQUIPMENT IS THE **"MONOPUR 4+3"** MONOLITHIC FLOORING SYSTEM INSTALLED BY A CERTIFIED APPLICATOR.

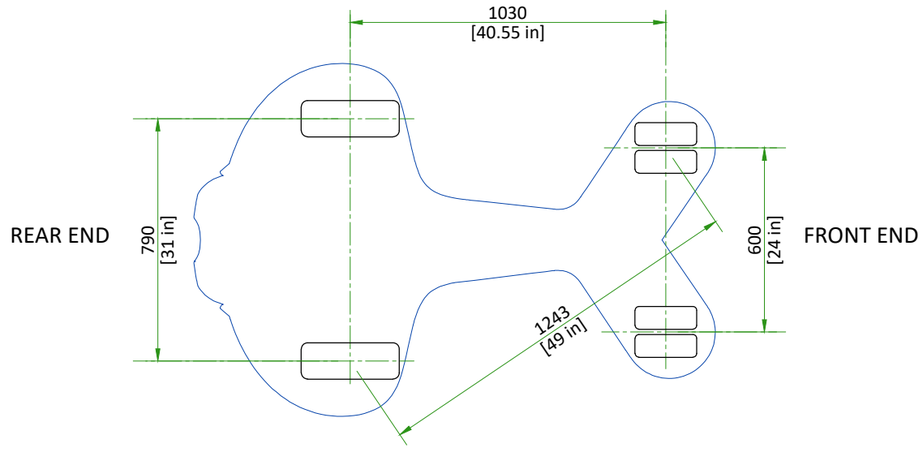
CONTACT YOUR LOCAL GE REPRESENTATIVE FOR THE LIST OF APPLICATORS.

EXAM ROOM FLOOR ACCEPTANCE SPECIFICATION FOR SUBSTRATE BEFORE MONOPUR APPLICATION	
SUBSTRATE FLATNESS	**< 3 mm/2 m [0.12 in/6 ft]**
SUBSTRATE LEVELNESS	**< 1 mm/m [0.04 in/3 ft]**
PULL-OUT STRENGTH (i.e. Elcometer Adhesion Testor)	**> 1.5 MPa [218 PSI]**
HARDNESS (i.e. Schmidt Hammer Sclerometer)	**> 30 N/mm² [4300 PSI]**
SUBSTRATE HYGROMETRY CaCl (ASTM F1869), RH% (ASTM F2170)	**< 6% surface** **(pin method)**
FINISHED FLOOR SURFACE SPECIFICATIONS	
FLATNESS	**< 3 mm/2 m [0.12 in/6 ft]**
LEVELNESS	**< 1 mm/m [0.04 in/3 ft]**

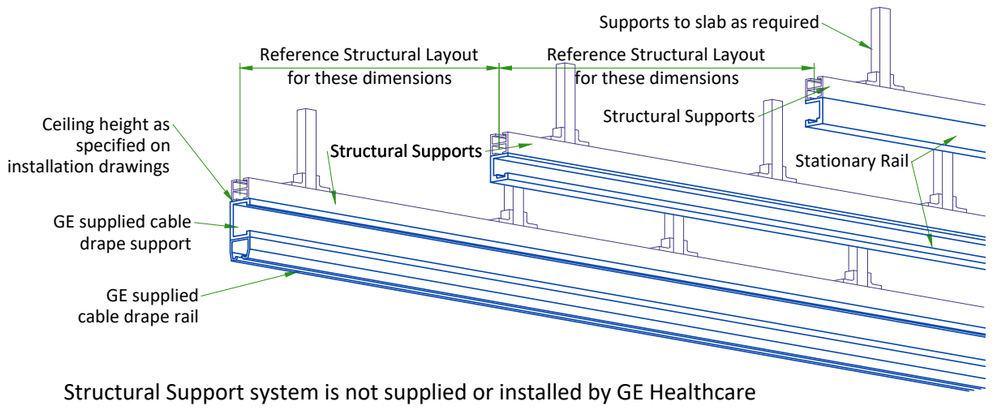
- (Bare) Concrete floor preparation and floor resin application falls under the customer's contractor responsibility.
- No expansion joint shall be present in the concrete in the area where the flooring system will be applied.
- Electrical connection of the conductive flooring falls under customer's responsibility.

GANTRY WEIGHT

COMPONENT	NET WEIGHT		WEIGHT/OCCUPIED AREA
GANTRY	TOTAL WEIGHT (IGS 730)	990 kg [2183 lb]	990 kg/m² [202.7 lb/ft²]
	TOTAL WEIGHT (IGS 740)	1000 kg [2205 lb]	1000 kg/m² [204.8 lb/ft²]
	REAR ISOLATED LOAD	350 kg [772 lb]	5.5 MPa [798 lb/in²]
	FRONT ISOLATED LOAD	110 kg [243 lb]	8.1 MPa [1175 lb/in²]

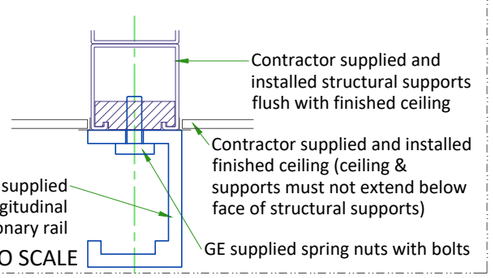


XT RADIOGRAPHIC SUSPENSION, INBOARD MOUNTING

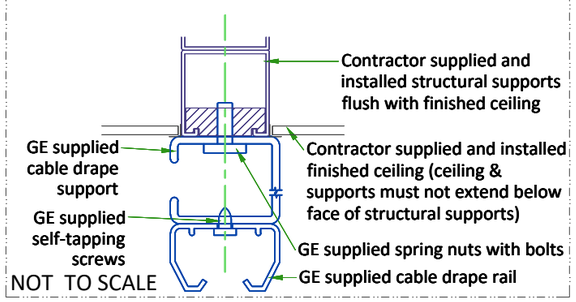


Structural Support system is not supplied or installed by GE Healthcare

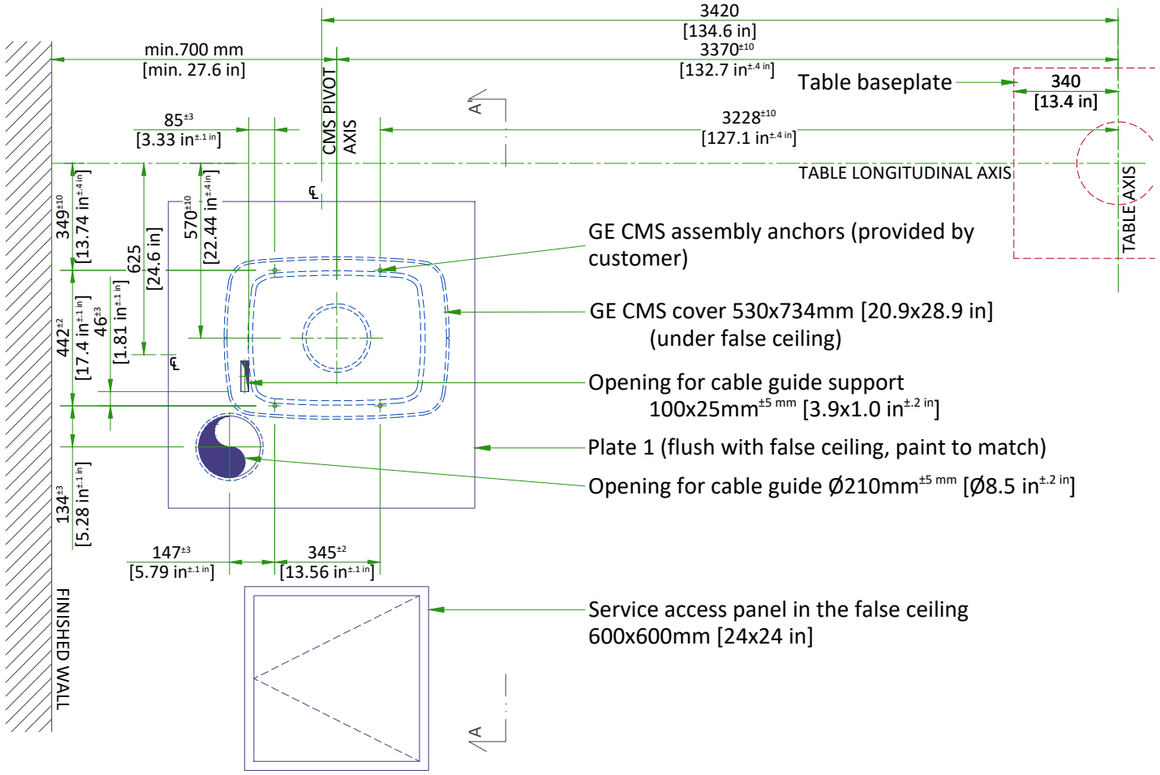
DETAIL 1



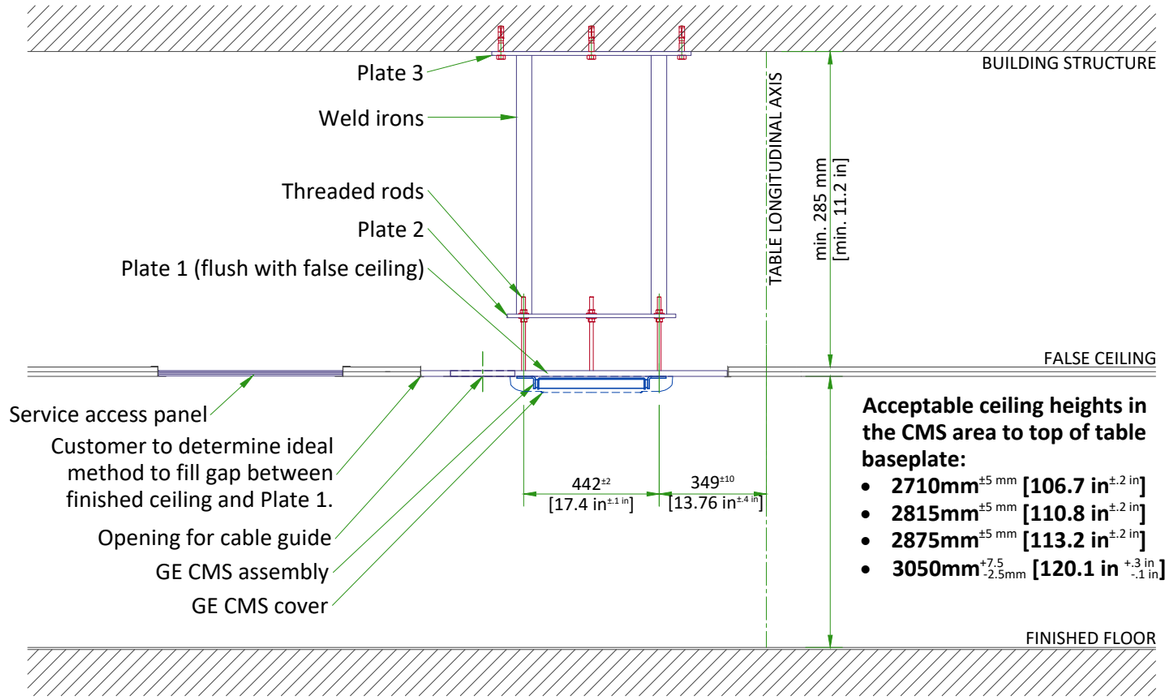
DETAIL 2



CABLE MANAGEMENT SYSTEM (CMS) CEILING PLAN



SECTION A-A'



Acceptable ceiling heights in the CMS area to top of table baseplate:

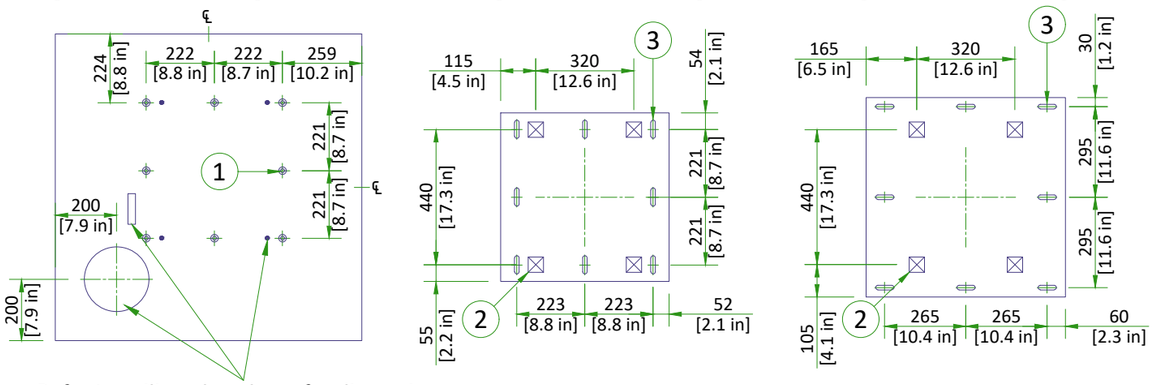
- **2710mm±5 mm [106.7 in±.2 in]**
- **2815mm±5 mm [110.8 in±.2 in]**
- **2875mm±5 mm [113.2 in±.2 in]**
- **3050mm+7.5 -2.5mm [120.1 in +.3 in -.1 in]**

CUSTOMER SUPPLIED CMS SUPPORT PLATE DETAILS

PLATE 1
≥1000x1000x12 mm
[39.4x39.4x0.5 in]

PLATE 2
550x550x12 mm
[21.7x21.7x0.5 in]

PLATE 3
650x650x12 mm
[25.6x25.6x0.5 in]



Refer to ceiling plan above for dimensions of CMS anchors, cable guide, and cable guide support.

LEGEND

(1) Qty 8 hardened threaded rods (double nut adjustable to plate 2, weld and grind flush to plate 1)
(2) Qty 4 Weld irons or equivalent (weld and grind flush to plate 2 and 3)
(3) 15x60mm [5/8x2.4 in] slotted adjustable opening

NOTES

HARDWARE INFORMATION

All hardware to be provided by customer and verified by a qualified structural engineer.
Recommended fasteners are listed below:

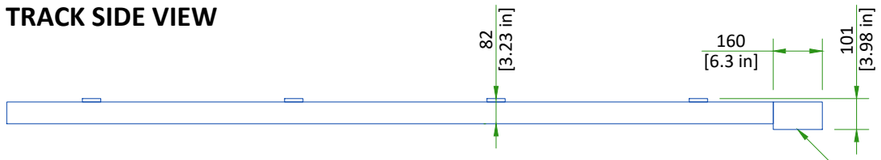
(1) Plate 1 to GE CMS assembly: Qty 4 M12 [1/2 in] class 8.8 anchors, Qty 4 NORD-LOCK washers.
Max. axial effort = 153 daN
Max. shear force = 12.5 daN
(2) Plate 1 to Plate 2: Qty 8 M12 [1/2 in] hardened threaded rods
(3) Plate 2 to Plate 3 Qty 4 50x50mm [2x2 in] weld irons or equivalent
(4) Plate 3 to building structure: Qty 8 M12 [1/2 in] anchors (or larger)

IMPORTANT NOTES

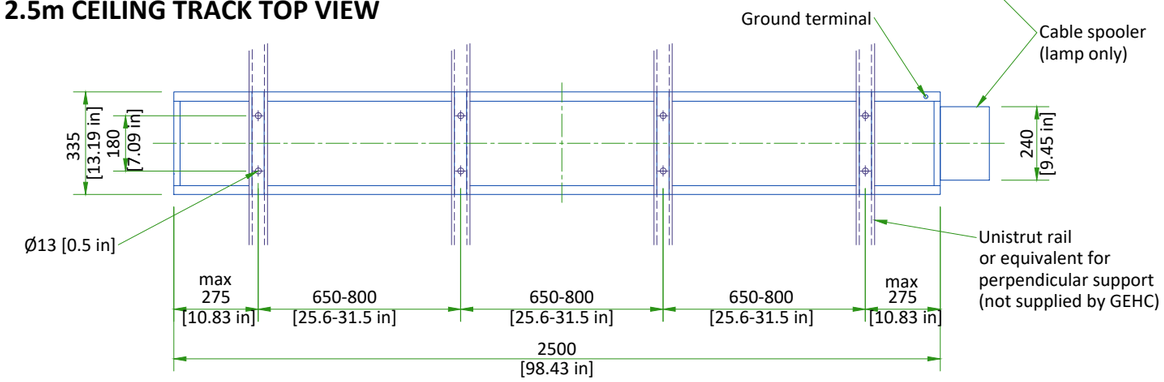
- **Cable Management System (CMS) support structure depicted on this page is only a typical example.**
- The CMS support structure shall be designed by a structural engineer and is installed by the customer/contractor. Final design of structure may differ from this page. Refer to documentation provided by structural engineer.
- No elements (lighting, vent, smoke detector etc.) shall protrude below the false ceiling.
- Special attention is required to ensure that the CMS Pivot Axis is the main installation reference point and not the center of Plate 1.

MAVIG SUSPENSION MOUNTING METHOD

2.5m CEILING TRACK SIDE VIEW



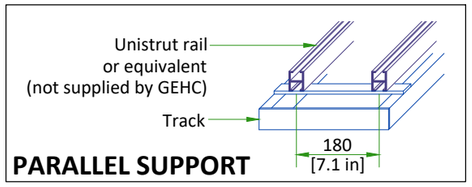
2.5m CEILING TRACK TOP VIEW



- Weight up to: 94 kg [207 lb] (75 kg [165 lb] system + 19 kg [42 lb] track)
- The required factor of safety is "4" for attaching to Unistrut or equivalent rails and "6" for attaching to the concrete ceiling.

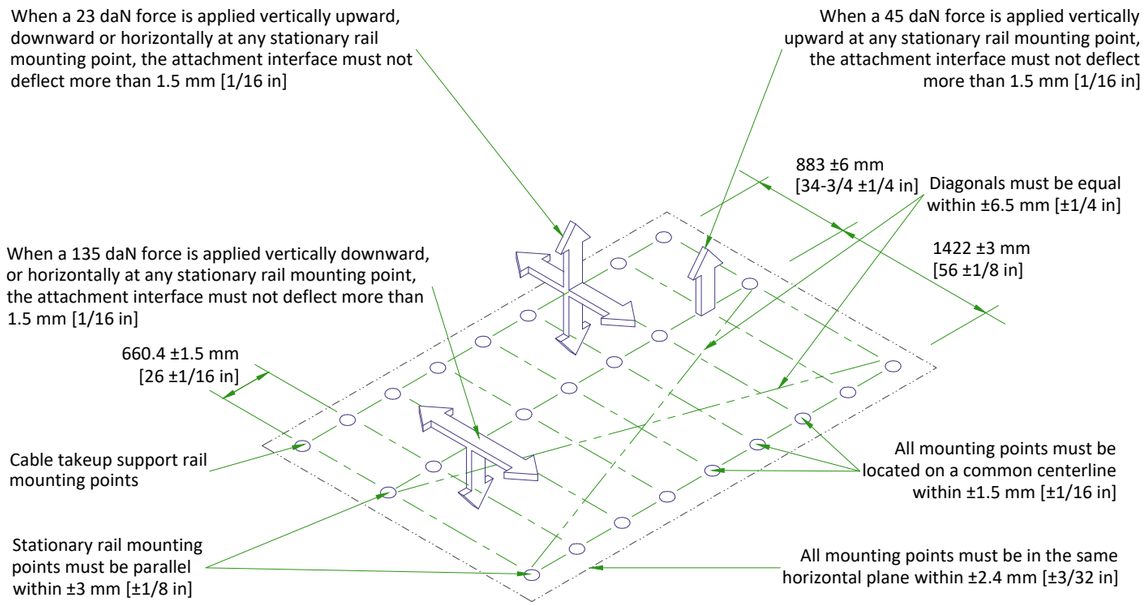
CONSULT MAVIG INSTALLATION MANUAL REV: POR03O11 TO DESIGN AND MOUNT THE CEILING SUPPORT.

SCALE 1:20



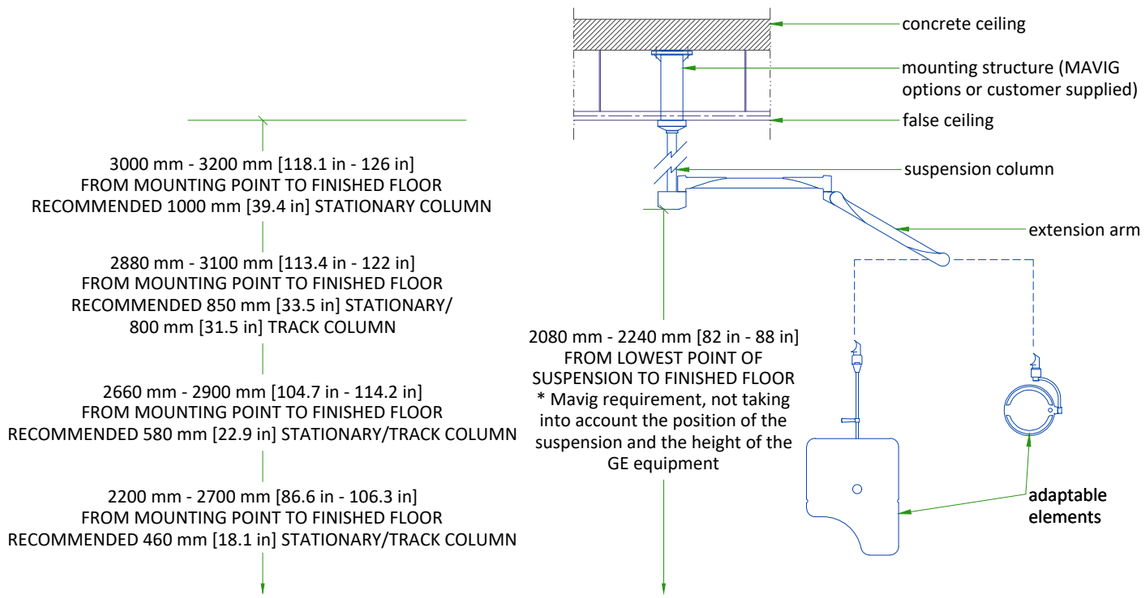
PARALLEL SUPPORT

MONITOR SUSPENSION RAIL MOUNTING SPECIFICATIONS



Each stationary rail must be mounted by bolts supplied or by 12 mm [1/2 in] as metric bolts. The maximum load per bolt must not exceed 1557 N [350 lbs] and each mounting bolt must not "PULL OUT" or otherwise fail under a vertically downward dead load of 6228 N [1400 lbs].

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

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.

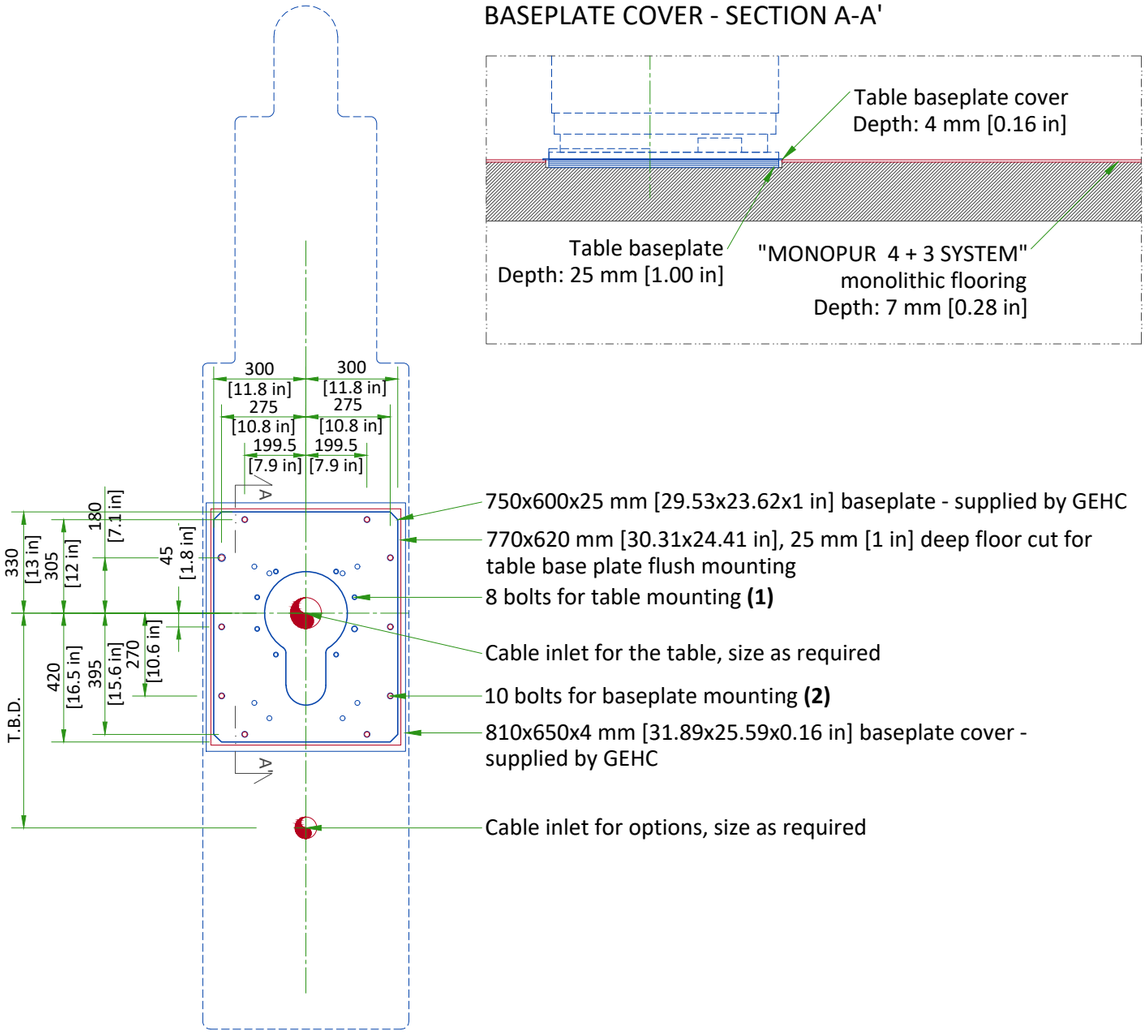
Under GE responsibility or under Customer responsibility, for all pre-installations, whatever is the supporting structure (bridge, chair, Unistrut channel, other channels, direct anchorage in concrete, transversal beam, etc. …) a certificate must be obtained from a structural engineer.

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.

TABLE MOUNTING WITH TABLE BASEPLATE



BASEPLATE COVER - SECTION A-A'

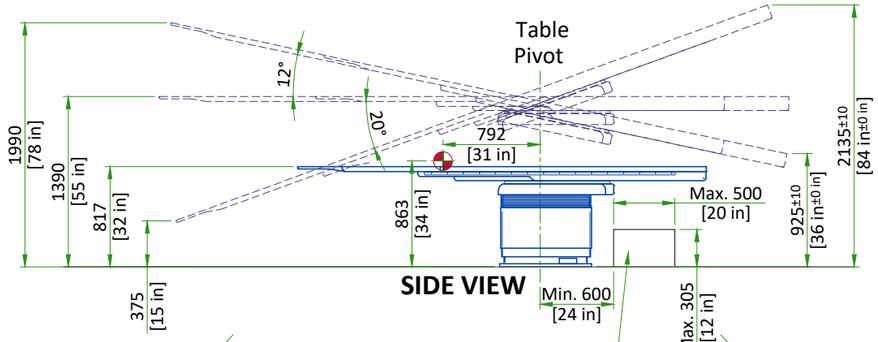
ANCHOR SPECIFICATIONS

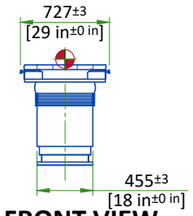
(1) GEHC supplied tilting table anchors: qty. 8 M16x40 mm bolts
(2) GEHC suppled table baseplate anchors:
- Through floor anchors: qty. 10 M20 bolts
- On-floor anchors: qty. 10 18mm Bolt M12 and associated Large Washer
- Pull out strength for each bolt type: 1120 daN

BASEPLATE MOUNTING REQUIREMENTS

- The maximum pullout force per provided anchor was calculated assuming:
  - A concrete compression strength of **30 MPa** at 28 days (which is the minimum required compression strength).
  - Anchors installed to the required hole depth of **165.1 mm [6.50 in]** minimum.
  - The distance between the center of anchor hole and the edge of the concrete is **79.4 mm [3.13 in]**.
- Make sure to obtain data on compression strength of the concrete before using floor anchors.
- Chemical anchors can be used as well: HILTIHVU adhesive capsule + HAS Anchor rod.
- The fixation screws shall not jut out of the table baseplate, plate has to be level.

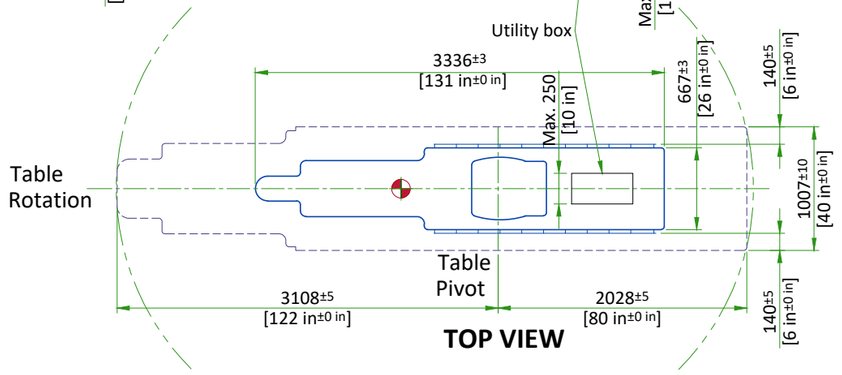
PATIENT TABLE





Center of Gravity

Scale 1:50



The Utility box under the table is not recommended for the surgical configuration.
It is forbidden to place or install objects under the head end of the table that could interfere with AGV motion.

TEMPERATURE AND HUMIDITY SPECIFICATIONS

IN-USE CONDITIONS

	EXAM ROOM			CONTROL ROOM			TECHNICAL ROOM		
Temperature	Min	Recommended	Max	Min	Recommended	Max	Min	Recommended	Max
	15 °C [59 °F]	20 °C [68 °F]	32 °C [90 °F]	15 °C [59 °F]	20 °C [68 °F]	35 °C [95 °F]	15 °C [59 °F]	20 °C [68 °F]	25 °C [77 °F]
Temperature gradient	**≤ 10 °C/h**			**≤ 10 °C/h**			**≤ 10 °C/h**		
RH (1) non condensing	20% to 70%			20% to 75%			20% to 75%		
Humidity gradient	**≤ 10%/h**			**≤ 10%/h**			**≤ 10%/h**		

STORAGE CONDITIONS

Temperature	+10 °C [50 °F] to +40 °C [104 °F]
RH (1) non condensing	10% to 80%
Pressure	700 hPa to 1030 hPa
Overall storage time shall be less than 6 months.	

(1) Relative humidity

20 kVA FLUORO UPS

Air renewal	According to Standard IEC 62040-1-2

Systems with 20 kVA UPS shall be stored for less than 6 weeks if the storage temperature is above +30°C [86°F], and less than 12 weeks if storage temperature is above +25°C [77°F] .

AIR RENEWAL

According to local standards.

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

ROOM	DESCRIPTION	HEAT OUTPUT (kW)				HEAT OUTPUT (BTU/hr)			
		STAND BY	MODERATE[1]	TYPICAL[2]	MAX[3]	STAND BY	MODERATE[1]	TYPICAL[2]	MAX[3]
Exam room	Gantry and table	0.41	0.55	0.89	1.62	1399	1877	3037	5528
	Large Display Monitor (LDM) with 2 backups	0.10	0.10	0.10	0.10	341	341	341	341
	Typical injector	0.09	0.09	0.09	0.09	307	307	307	307
	TOTAL	**0.60**	**0.74**	**1.08**	**1.81**	**2047**	**6176**	**3685**	**6176**
Control room	DL console and live monitor	0.10	0.10	0.10	0.10	341	341	341	341
	Advantage Workstation (AW)	-	-	-	1.00	-	-	-	3412
	TOTAL	**0.10**	**0.10**	**0.10**	**1.10**	**341**	**341**	**341**	**3753**
Technical room	C-FRT Cabinet	0.70	1.02	1.53	2.16	2388	3480	5221	7370
	System Interface Cabinet	0.50	0.50	0.50	0.50	1706	1706	1706	1706
	Tube Conditioner	2.53	4.49	5.49	6.93	8633	15321	18733	23646
	Detector Conditioner	0.21	0.21	0.21	0.21	717	717	717	717
	8 kVA UPS	0.52	0.52	0.52	0.52	1760	1760	1760	1760
	Fluoro UPS 20 kVA	2.14	2.14	2.14	2.14	7302	7302	7302	7302
	TOTAL	**6.60**	**8.88**	**10.39**	**12.46**	**22506**	**30286**	**35439**	**42501**

WARNING
The list contains only the principal components of the system and doesn't contain any non-GE supplied equipment.

[1] Moderate Use corresponds to 8 cases in 10 hours.

[2] Typical Use corresponds to 11 cases in 10 hours.

[3] Maximum Use is maximum peak power during exam.

CONNECTIVITY REQUIREMENTS

Service Connectivity for new systems will be based on the Insite-RSvP Platform which allows to configure a direct Internet connection to the RSvP Server (routers/VPN tunnel no more mandatory). Communication with the RSvP server will be outbound only and require using Transport Layer Security (TLS) over TCP port 443. This is commonly known as an HTTPS (HTTP-Secure) connection.

There will be several ways to connect the system to the RSvP Enterprise Server. See below the main options that might not be all available or authorized at your site depending on actual network constraints or local regulations.:

- The system allows for DNS configuration or proxy server-based connection to the Internet.
- Connection thru a GE Proxy will be possible in the future.
- In the case the customer does not accept the above connection protocol or regulatory reasons prevent using these types of configurations, the local/regional connectivity teams can provide help to connect through SSL/TLS proxy IP over the site-to-site VPN.

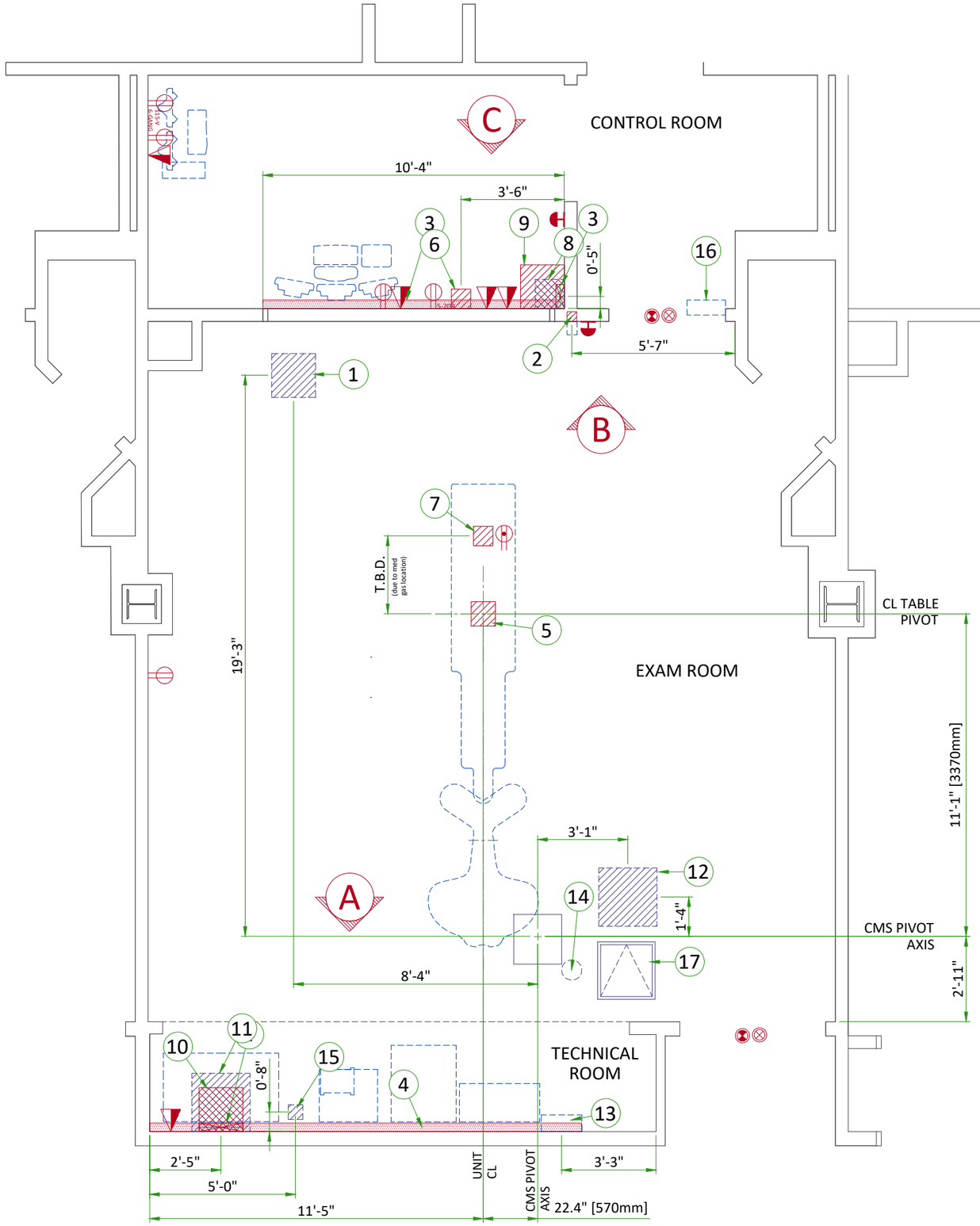
To make the system connectivity operational before the system installation is finished, ensure the connectivity solution is defined as early as possible during the pre-installation process and proper information are exchanged between the customer Network Administrators and GEHC Sales and/or Service representatives.

For more information please refer to the latest version of the Pre Installation Manual.

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.

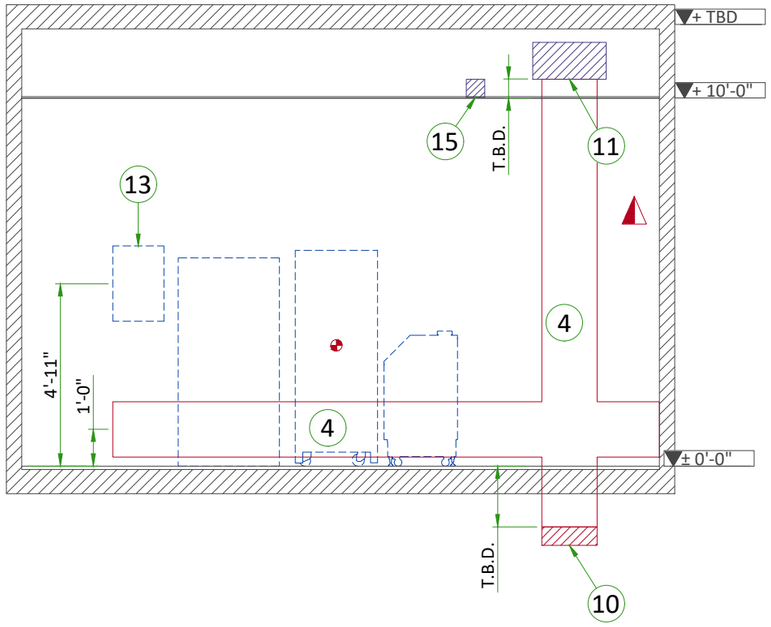


ITEM	ELECTRICAL LAYOUT ITEM LIST
1	18"x18"x6" [450 x 450 x 150] flush ceiling box with split coverplate (monitors)
2	4"x4"x4" [100 x 100 x 100] flush wall junction box 12" [300] below finished ceiling
3	10" x 3 1/2" [250 x 89] surface wall duct with minimum 2 dividers
4	18" x 3 1/2" [450 x 89] surface wall duct with minimum 2 dividers
5	8" x 8" x 6" [200 x 200 x 150] box below floor (table)
6	8" x 8" x 6" [200 x 200 x 150] box below floor (patient monitoring equipment)
7	8" x 8" x 6" [200 x 200 x 150] box under table (PDM/TRAM)
8	12"x12"x6" [300 x 300 x 150] box above ceiling in control room
9	18" x 18" x 6" [450 x 450 x 150] box below floor in control room
10	18"x18"x6" [450 x 450 x 150] box below floor in equipment room
11	24"x24"x12" [600 x 600 x 300] box above ceiling in equipment room
12	24"x24"x12" [600 x 600 x 300] box above ceiling in exam room
13	Main disconnect panel (MDP)
14	Cable management system (CMS)
15	6"x6"x6" [150 x 150 x 150] box above ceiling for waterlines
16	Light signaling control box
17	24"x24" [600 x 600] service access panel in ceiling

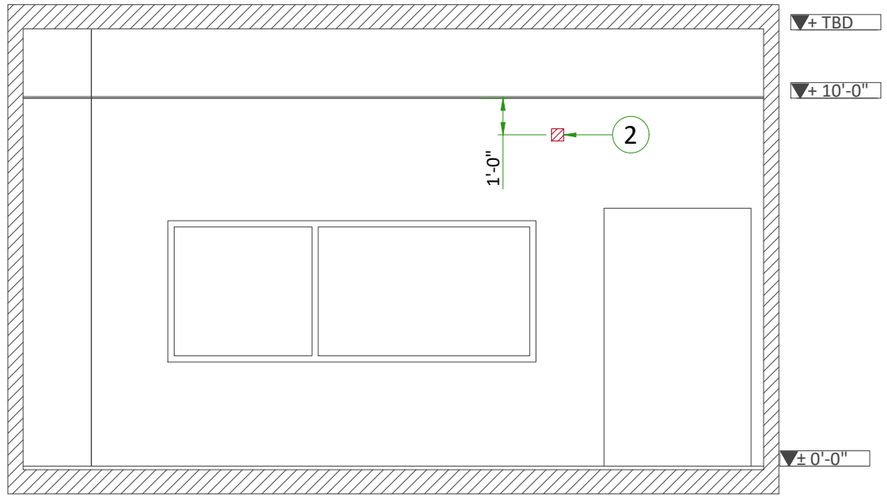
ITEM	QTY	Electrical Outlet Legend Customer/contractor supplied and installed items unless otherwise specified. Height above floor determined by local codes unless otherwise specified.
		System emergency off (SEO), (recommended height 1.2m [48"] above floor)
		X-Ray ON lamp (L1) - 24 V
		System ON lamp (L) - 24 V (only if needed per local codes)
		Duplex hospital grade, dedicated wall outlet 120-v, single phase power
		Duplex hospital grade, dedicated ceiling outlet 120-v, single phase power
		Network outlet
		Duplex hospital grade, dedicated outlet 120-v emergency, single phase power, 15a
115-V 6-GANG		6-Gang hospital grade, dedicated wall outlet 115-V, single phase power
5-20R		5-20R NEMA Receptacle, dedicated outlet 120-v, single phase power

Additional Conduit Runs
(Contractor Supplied and Installed)

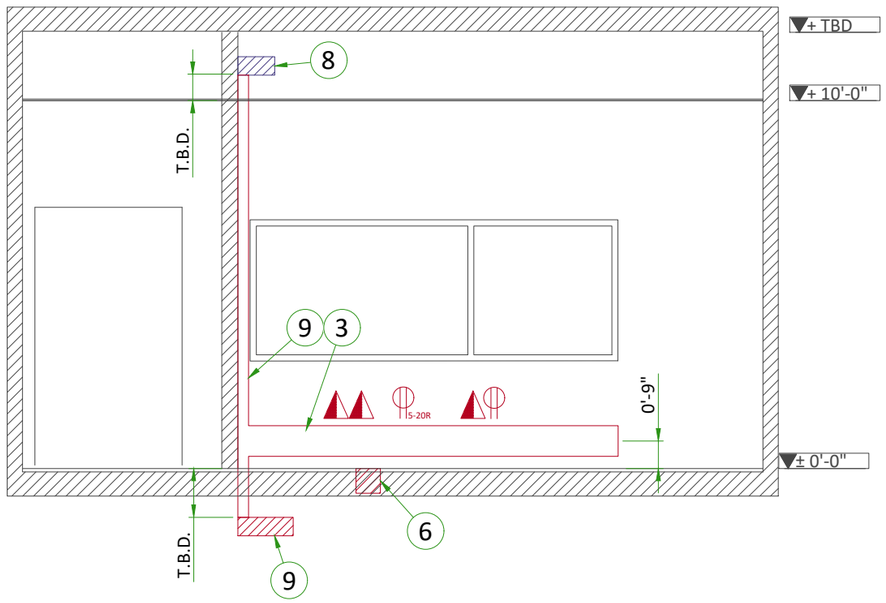
From (Bubble # / Item)		To (Bubble # / Item)		Qty	Usable length	Size (in)
11	Cable Management System	12	CFRT Cabinet	2&2	42 ft.	4 & 3
5	Table	10	CFRT Cabinet	1	62 ft.	4
9	Control Room	10	CFRT Cabinet	1&2	59 ft.	$3\frac{1}{2}$"&$2\frac{1}{2}$"
9	Bolus Chase	5	Table	1	85 ft.	$2\frac{1}{2}$
15	Water Line	14	Cable Management System	1	59 ft.	3
16	Light Signaling Electrical Box		Warning light	1	-	$\frac{1}{2}$
16	Light Signaling Electrical Box	11	System Interface Cabinet	1	-	$\frac{1}{2}$
16	Light Signaling Control Box		120-V 1 phase power	1	-	As Req'd
2	X-Ray Buzzer	11	CFRT Cabinet	1	90 ft.	$1\frac{1}{2}$
2	X-Ray Buzzer	8	Control Room	1	90 ft.	$1\frac{1}{2}$
1	Monitor Bridge / Boom	8	Control Room	1	88 ft.	$2\frac{1}{2}$
1	Large Display Monitor	11	CFRT Cabinet (LDM server)	1	88 ft.	3&$\frac{3}{4}$
10	CFRT Cabinet (LDM server)	9	Control Room	1	59 ft.	3
10	CFRT Cabinet (LDM server)	7	TRAM/PDM	1	-	3
13	Main Disconnect Panel	4	20 kVA UPS	2	-	As Req'd
11	System Interface Cabinet		Emergency off	1	-	$\frac{1}{2}$
11	System Interface Cabinet		Emergency off	1	-	$\frac{1}{2}$
13	Main Disconnect Panel	4	System Interface Cabinet	1	14-44 ft.	1
15	Detector Water Lines	14	Cable Management System	1	59 ft.	3
8	Patient Monitoring Console	1	Monitor Bridge / Boom	1	-	3
6	Patient Monitoring Console	7	TRAM/PDM	2	-	3


+ TBD
+ 10'-0"
15
T.B.D.
11
13
4
4'-11"
1'-0"
4
± 0'-0"
T.B.D.
10

A


+ TBD
+ 10'-0"
2
1'-0"
± 0'-0"

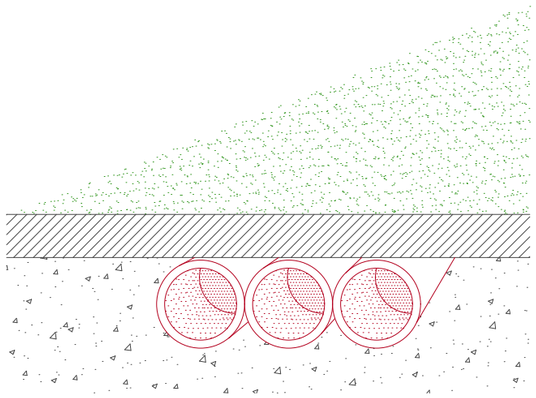
B


+ TBD
+ 10'-0"
8
T.B.D.
9
3
5-20R
0'-9"
± 0'-0"
6
T.B.D.
9

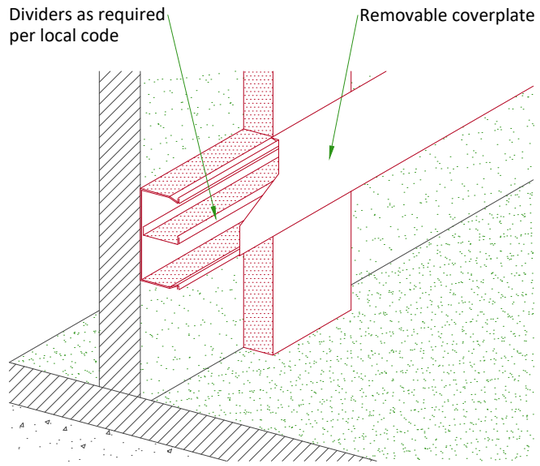
C

TYPICAL CABLE MANAGEMENT

CONDUIT IN THE FLOOR



WALL DUCT



NOT TO SCALE

POWER REQUIREMENTS

POWER SUPPLY	**3 PHASES+N+G 380/400/415/480 V ±10%**
FREQUENCIES for 380/400/415V	**50/60 Hz ± 3 Hz**
FREQUENCY for 480V	**60 Hz ± 3Hz**
PEAK POWER CONSUMPTION	**150 kVA**
MOMENTARY POWER CONSUMPTION	**100 kVA**
LONG TIME POWER CONSUMPTION	**18 kVA**
MINIMUM PROTECTION	**100 A (D curve or equivalent)**
MAXIMUM LINE IMPEDANCE PHASE TO PHASE	**380 V : 0.09 Ω / 400 V : 0.096 Ω / 415 V : 0.102 Ω / 480 V : 0.12 Ω**

- The section of the supply cable should be calculated in accordance with its length and the maximum line impedance per phase and rating of protection minimum 35mm² [2 AWG]
- The Protective Earth cables shall not be smaller than the power cables.
- Hospital shall provide Equipotential busbar in the exam room. Connections shall be so arranged that they are accessible, labeled, clearly visible.
- Neutral is mandatory for Fluoro UPS (20 kVA) control.
- TNS neutral point connection must be used.
- In case of IT or delta configuration without neutral, an isolation transformer is needed (supplied by customer)

SUPPLY CHARACTERISTICS

- Power input must be separated from any others which may generate transients (elevators, air conditioning, radiology rooms equipped with high speed film changers ...)
- All equipment installed with IGS system components must be powered separately (e.g. lighting, power outlets)
- Transients must be less than 2,000 V peak in common mode and 1,000 V in differential mode, with a duration limited to a few microseconds.

CABLES

- MDP to System Interface Cabinet cable shall be copper cable and cable insulation temperature shall be 90°C.
- The cables from signaling and remote control (SEO, L...) will go to System Interface Cabinet with a pigtail length of 2.0 m [6.5 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 :

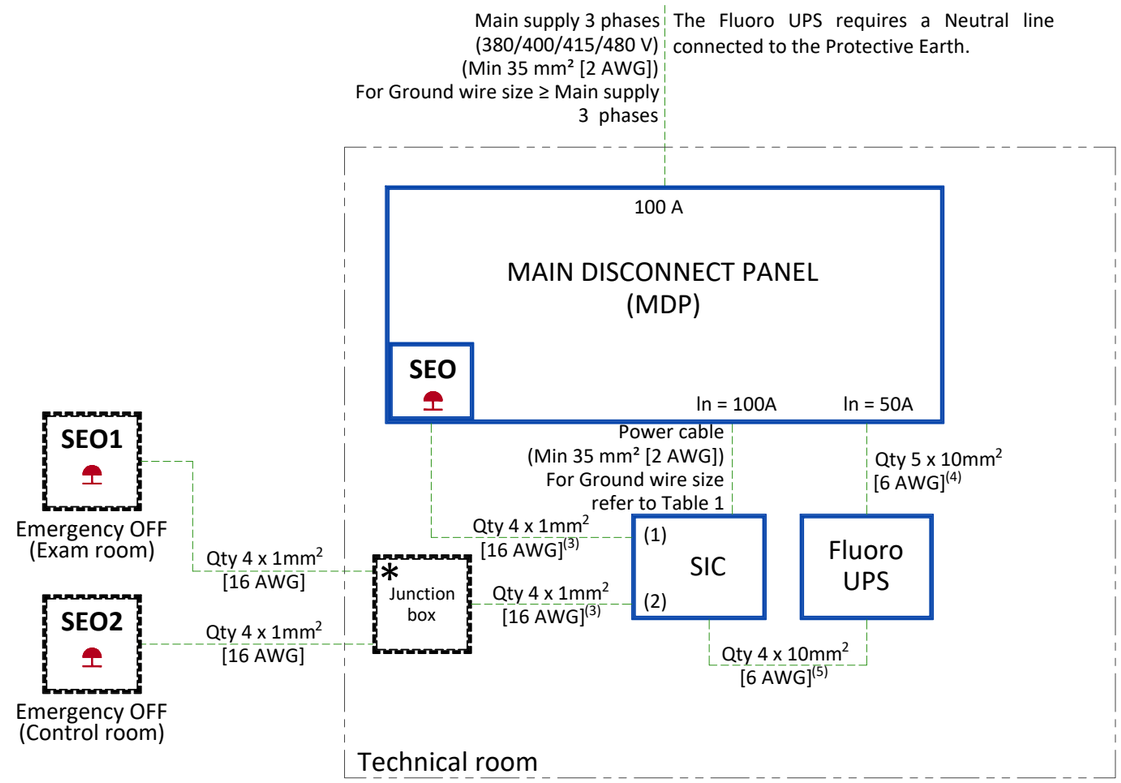
- Protecting cables against water (Cableways should be waterproof),
- Protecting cables against abnormal temperatures (Proximity to heating pipes or ducts),
- Protecting cables against temperature shocks,
- Replacing cables (Cableways should be large enough for cables to be replaced) ,
- Only GEHC cables are running inside cableways.
- Metal cableways should be grounded.

MANDATORY LOTO REQUIREMENTS

- The MDP shall provide means of disconnecting the mains power from the system, with LOTO capability to ensure safe service operation. It can be done by the input breaker if it has disconnecting capability, or by a separate disconnection device.
- An operator should be able to apply LOTO without opening the MDP box. When a LOTO device is installed on the MDP input breaker or on the disconnecting device, there shall be no voltage at the output of the MDP.

POWER DISTRIBUTION FOR IGS SYSTEM

POWER SUPPLY FOR MAIN SYSTEM



SEO Emergency OFF button with two normally closed (NC) contacts in the door of MDP

SEO 1-2 Emergency OFF button with two NC contacts located 1.50 m [5 ft] above floor
The EPO button shall be protected against accidental activation.
*Series connection of SEO1 and SEO2 NC contacts

SIC System Interface Cabinet

Table 1

LENGTH	<6 m [20 ft]	<15.1 m [50 ft]
GAUGE	Qty 1x2 AWG	Qty 2x2 AWG
GAUGE	Qty 1x35 mm²	Qty 2x35 mm²

NOTES:

(1) Emergency power off : MDP EPO

(2) Emergency power off : Remote EPO

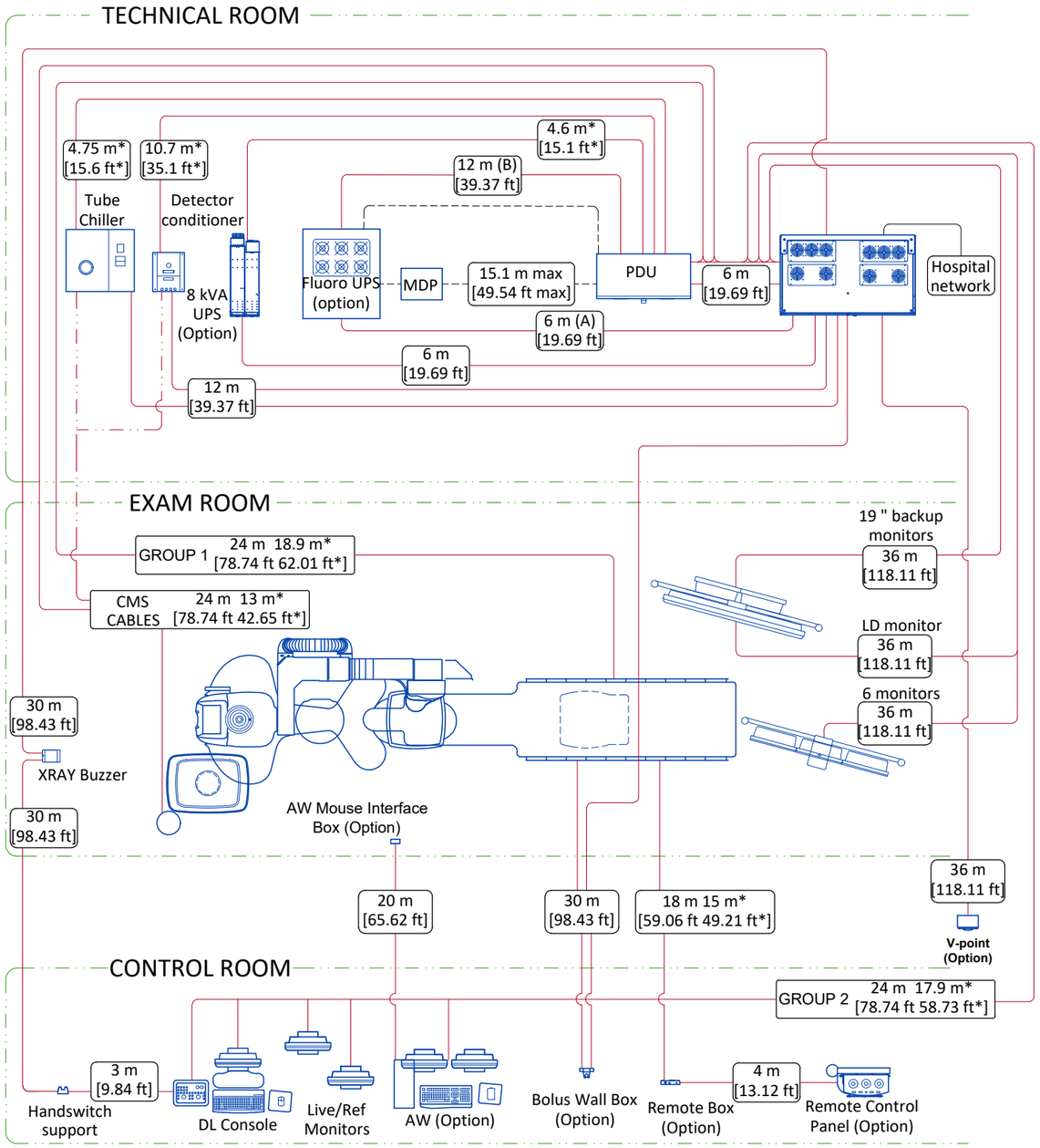
(3) Cable with 2 m [6.6 ft] extra length on the floor behind the SIC

(4) If length < 10 m [32.8 ft] - Cable with 2 m [6.6 ft] extra length on the floor behind the Fluoro UPS

(5) If length < 12 m [39.4 ft] - Cable with 2 m [6.6 ft] extra length on the floor behind the Fluoro UPS and SIC

Cable SUPPLIED BY CUSTOMER
Cable SUPPLIED BY GE
Equipment SUPPLIED BY CUSTOMER
Equipment SUPPLIED BY GE

INTERCONNECTIONS



	Cable supplied by the client
	Cable supplied by GE
	Cable supplied by GE (contains water hoses)
	Room wall
.....m / .....ft	Total length
.....m* / .....ft*	Usable length

Notes:

(A): A 6 m [19.69 ft] Ethernet cable between the C-FRT Cabinet and the Fluoro UPS is provided with the system. If a longer cable is needed, it shall be provided by the hospital; it shall be Cat5 minimum.

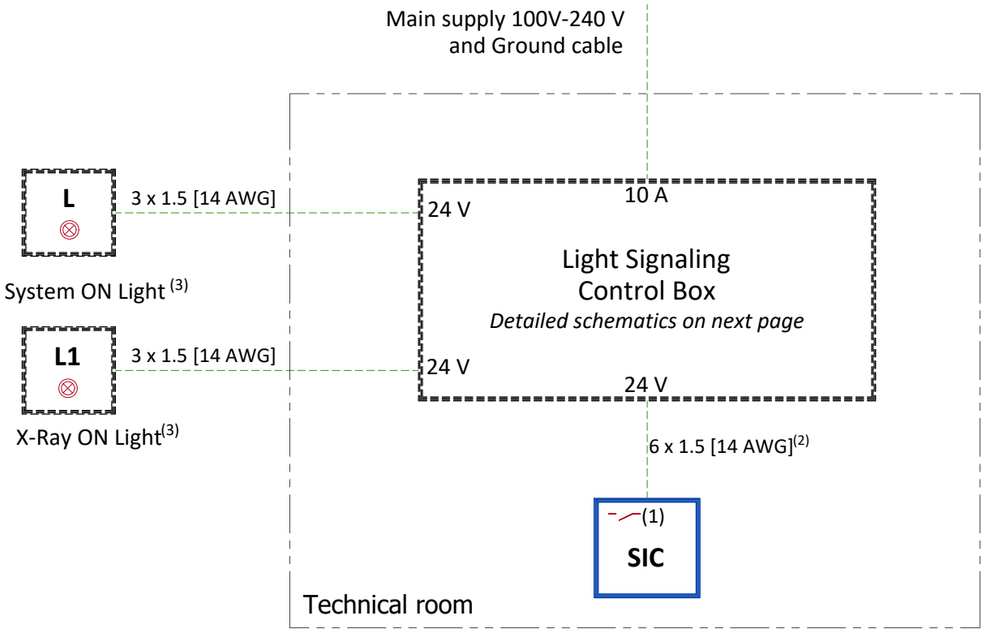
(B): A 12 m [39.37 ft] EPO cable between the PDU and the Fluoro UPS is provided with the system. If a longer cable is needed, it shall be provided by the hospital, its minimum gauge shall be 1 mm^2 [17 AWG].

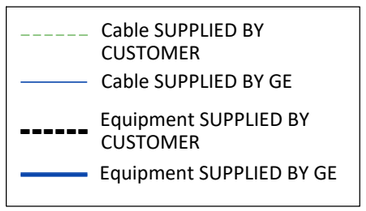
POWER REQUIREMENTS (LIGHT SIGNALING)

SPECIFICATIONS OF POWER INPUT

FOR ELECTRICAL BOX LIGHT SIGNALING	
POWER DEMAND	**10 A**
VOLTAGE	**Single Phase 100V - 240V ± 10%**
FREQUENCY	**50/60 Hz ± 3Hz**

POWER DISTRIBUTION (LIGHT SIGNALING)





L System ON light - Located near access doors (3)(4)

L1 XRay ON light - 24 V, Located near access doors and inside the exam room (3)(4)

SIC System Interface Cabinet

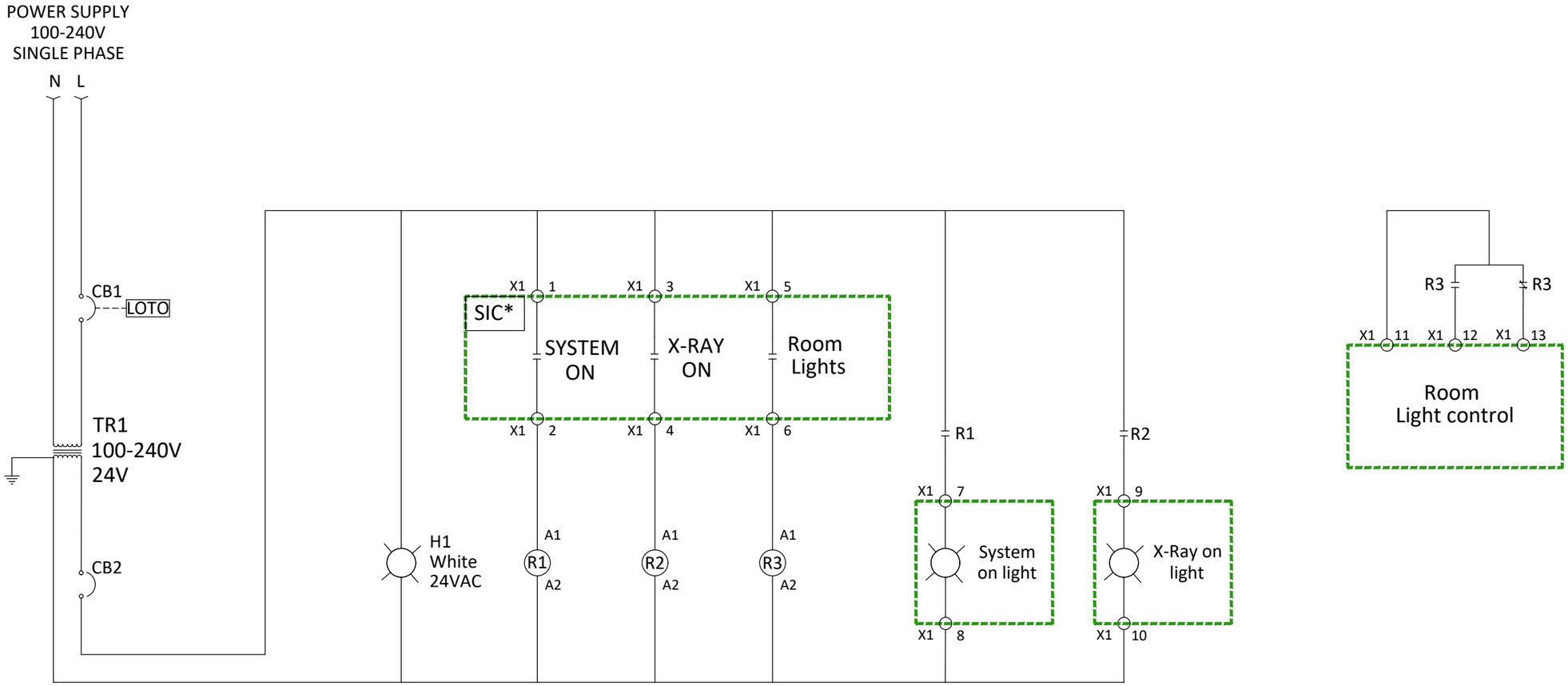
NOTES:

(1) Three dry contacts: "System ON", "X-Ray ON" and Room lights control are released by SIC. Max. voltage = 24 V

(2) Cable with 2m [6.6ft] extra length on the floor behind the back of SIC

(3) Location and/or quantity: refer to layout

DETAILED SCHEMATICS ELECTRICAL BOX (LIGHT SIGNALING)



CB1/CB2: Circuit breaker
H1: System ON lamp voltage control
IG: Lockable interruptor
L: System ON Lamp

L1: X-Ray ON Lamp
R1/R2/R3: 24 VAC 50/60 Hz auxiliary relay
SIC: System Interface Cabinet
TR1: Transformer

*

TERMINAL X1	SYSTEM ON		X-RAY ON		ROOM LIGHTS	
	1	2	3	4	5	6
PDU ON/OFF BOARD	1	2	1	2	1	2
	J15		J6		J10	

SYMBOLS LEGEND

- Circuit breaker
- # Relay coil
- Relay contact - normally open (de-energized state)
- Relay contact - normally closed (de-energized state)
- Control power transformer
- H1 Indication light
- Cable/conductor termination
- LOTO External lock-out/tag-out capability
- Ground