

# SIEMENS SOMATOM FORCE

## **Renovate for Cardiology Building 100, Second Floor CT Equipment Evaluation**

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### **Department of Veterans Affairs**

**Palo Alto Health Care System  
3801 Miranda Avenue  
Palo Alto, California**

**Office of Construction and Facilities Management**

September 22, 2014 – VA 261-12-D-0077

VA Palo Alto Health Care System  
CT Equipment Evaluation

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## **A. REPORT SUMMARY**

The Siemens Somatom Force CT equipment can fit and function within the room previously design for the Siemens Definition Flash CT equipment. Minor modifications of the current design shall be made to support the newly selected CT model as follows:

- Addition of structural floor anchorages and ceiling support details.
- Provide firestopping and metal deck reinforcing at floor penetrations.
- Study electrical loads to determine impact.

The recommendations above are provided to ensure adequate support and proper operations for the Siemens Somatom Force CT unit.

## **B. GENERAL INFORMATION**

- Building 100 is the main hospital at the VA Palo Alto Campus.
- Renovations for the Cardiology Department located on the second floor of Building 100 is currently under construction.
- The current construction was designed to house a Siemens Definition Flash CT model. The hospital wishes to change the equipment to a Siemens Somatom Force CT model.
- The report evaluates the design modifications required to accommodate the newly selected CT model.

### Basis of Report:

The following VA design data was made available for review:

- New Equipment - Siemens Typical Drawing Project #13045
- Original Equipment Design Was Based On – Siemens Drawing Project #08013
- MEI Architectural Drawings Dated March 7, 2011, Construction Rev.#3 Issued: July 10, 2013
- SJ Engineers Mechanical Drawings Dated March 7, 2011, Construction Rev.#3 Issued: July 10, 2013
- FW Assoc. Electrical Drawings Dated March 7, 2011, Construction Rev.#3 Issued: July 10, 2013
- H. J. Degenkolb Structural Drawings Dated August 4, 1993
- VA Design Guide Plates
- VA Design Manual for New, Replacement, Addition and Renovation of Existing VA Facilities

### Room Layout:

The drawings indicate:

- The CT Room is located on the second floor of Building 100.
- Mechanical equipment is proposed to be located on the roof.

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- The CT Room is 20' x 24', including an equipment closet. It is located adjacent to a Cath Lab Control Room, which will share the same control function. See Exhibit A.
- The floor is steel framed with metal decking and concrete fill over.
- The floor to floor height is 16'.
- Walls are lead lined gypsum board over light gauge metal studs.
- The ceiling has suspended acoustical tiles with standard 2x4 fluorescent lighting, incandescent fixtures and mechanical diffusers.

### C. ARCHITECTURAL ASSESSMENT

#### Findings:

- Physical Difference in Siemens Equipment
  - The minimum size of the longer room dimension required increased from 20'-3" to 21'-3".
  - The minimum width of the closet decreased from 11'-6" to 11'-0".
  - The orientation point and hose connection location of the gantry has moved slightly.
  - The required door opening for delivery has increased from 6'-6 <sup>3</sup>/<sub>4</sub>" to 6'-7 <sup>1</sup>/<sub>2</sub>" in width and decreased from 5'-8 <sup>1</sup>/<sub>2</sub>" to 5'-3 <sup>3</sup>/<sub>8</sub>".
  - The unit weight has increased from 6,295 lbs. to 6,448 lbs.
  - There are only minor differences in equipment dimensions and layout requirements.

The architectural design of the room will accommodate the physical equipment differences.

- Lead Shielding
  - Radiation patterns are slightly different between the two machines.
  - Shielding is specified at the walls and doors.

The lead shielding design is adequate for the new equipment.

- Firestopping
  - Existing floor cores for cabling are in place and will require coordination of new floor core locations; refer to Structural recommendations.

#### Recommendations:

- Add firestopping at floor cores after cabling is installed but before CT equipment is moved in place.

### D. STRUCTURAL ASSESSMENT

#### Findings:

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- No structural drawings or structural calculations were provided in current construction documents. Therefore, it is unclear without further structural evaluation and design if current construction can support new equipment loadings.
- Supports for Ceiling Mounted Equipment represented on MEI architectural drawings:
  - There are two ceiling mounted equipment items, one on each side of the gantry, with different base plate and bolt patterns.
  - Detail 14 on sheet AS9-3 shows only one equipment.
  - Detail 14 on sheet AS9-3 shows a beam above the equipment for support. It has been verified that a beam does not exist where Siemens has located the two ceiling mounted equipment items.
- Anchors at Floor represented on MEI architectural drawings:
  - There are multiple structural anchorage points at the CT Scanner and for other pieces of equipment.
  - Detail 19 on sheet AS9-1A shows a beam at the anchorage location. It has been verified that a beam does not occur where Siemens has located anchorages.
  - Detail 12 on sheet AS9-1A does not specify the required through-floor bolts for structural anchorage.
- Penetrations Through Floor represented on Siemens drawings:
  - Under the CT Scanner, three closely spaced through-floor cores (3 and 4 inch diameter) are shown for running cabling. Note that closely spaced metal decking penetrations generally act as one large penetration.

Recommendations:

- Fill existing unused core locations, provide new core locations where required by Siemens for new equipment and structurally reinforce floor.
- Install new wedge type anchor bolts at where required by Siemens for new equipment.
- Fill existing core in equipment closet. Provide new through-bolt at equipment cabinet due to proximity of previous core location.
- Lengthen overhead equipment supports where required.

**E. MECHANICAL ASSESSMENT**

Findings:

- It appears that the control room's (CATH LAB CONTROL E2-414) airflows were not modified in this project. New equipment that generates heat was added to the control room, see below.
- Heat Loads:

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- Siemens equipment in the control room has increased from 4,095 BTU/H to 4,139 BTU/H.
  - Siemens equipment in the scanning room has remained the same at 3,924 BTU/H
  - Siemens equipment in the equipment room has decreased from 22,183 BTU/H to 20,142 BTU/H.
  - There is equipment added by the VA or the Architect in addition to the Siemens equipment. In other words, all medical equipment heat loads are due to Siemens equipment.
  - Per the VA design guidelines, two (2) people occupy the control room, four (4) people occupy the scanning room, and two (2) people occupy the equipment room. Heat loads for people are assumed to be 250 BTU/H per ASHRAE guidelines.
  - Per E0.1 and E2.1, there are 280 watts of lighting heat in the scanning room and 32 watts of lighting heat in the equipment room.
- Air Temperatures:
  - The supply air temperature is 58°F for all rooms.
  - Per VA guidelines, the room air temperature is required to be 70°F and 75°F for all rooms.
- Gantry Cooling Circuit
  - A new air-cooled (AC) chiller is being provided on the roof. It provides cooling via a heat exchanger (HX) on the 2<sup>nd</sup> floor. Note the heat exchanger has not been shown on the architectural or mechanical plans.
  - The Gantry is required to be cooled from a heat exchanger provided by Siemens.
- The maximum allowable noise requirement from Siemens in at the patient table has increased from 60 dB to 64 dB.
- A floor sink with trap primer is provided in the equipment room.
- A floor drain with trap primer is provided in the scanning room.
- The chiller does not appear to have a CW backup.
- Mechanical drawings reference structural drawings for the support of the chiller on the roof. Structural drawings were not included as a part of this package.
- VA guide plates show that a computer room air conditioning (CRAC) unit should be provided to cool the equipment room. The design shows the equipment room is only cooled by providing 850 CFM of airflow to the equipment room, resulting in approximately 115 air changes per hour. This amount of airflow to a small room will be a source of objectionable noise in a patient setting. The design requires that the system provide more airflow to this area than the amount currently provided. Architectural plans showing new equipment and modifications required to the roof for the installation of the air cooled chiller and concrete pad were not included.

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- Detail for ceiling supply and return diffuser shows a flexible duct elbow. VA detail requires a hard duct elbow.
- Terminal unit detail does not show seismic bracing.
- Chiller vibration isolator selected does not meet VA requirements for refrigeration equipment. The isolator is not a spring isolator and does not have the required deflection.

Recommendations:

- Scanner and Equipment Room have adequate CFM as originally designed.
- The VAV box in the existing Control Room is capable of supplying 975 CFM which can be verified using an Air Balance Report. Loads in this room will require 1040 CFM. It is possible that the Cath Lab Project will be removing equipment from the existing Control Room. The amount of load to be removed remains to be identified. A proposed Air Balance Report remains to be performed to further our knowledge of the environment in this room. It may be that the small difference in CFM is acceptable. If not acceptable or due to an impact of the Cath Lab project, it can be resolved by adding a split AC unit to supplement the cooling in this room at some future date.

## **F. PLUMBING ASSESSMENT**

Findings:

- A floor sink with trap primer is provided in the equipment room.
- A floor drain with trap primer is provided in the scanning room.
- The chiller does not appear to have a CW backup.

Recommendations:

- Provide CW backup in the event the chilled water system cannot provide required cooling.
- Provide make-up water to chiller and any required drains. There is no plumbing provided on the roof. The new air cooled chiller is on the roof.

## **G. ELECTRICAL ASSESSMENT**

Findings:

- Connecting the new CT scanner to the ME2 switchgear ATS will result in exceeding the rated capacity (600-amp) of the ATS.

Recommendations:

- Power provided in the original design is adequate for the changed equipment. However, the VA has determined that the power source from room ME2 with (E) 600 AMP ATS cannot provide adequate power to the CT room subpanel and it cannot be upgraded. An 800 AMP

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unit is too large to fit into this location but at the end of the bank, there is available space for future consideration. Also, opposite this location is a breaker panel with uninstalled spares. However, there is not enough generator power available to expand. This situation remains unresolved and we recommend VA study the power requirements for Building 100.

- Refer to Electrical Engineering Report, Attachment D for further details.

## **H. FIRE ALARM ASSESSMENT**

There are no Fire Alarm issues to address in this report.

## **I. CONTROLS ASSESSMENT**

### Findings:

- A standard sequence and diagram are provided for the terminal units.
- A chiller diagram is provided.
- A LAN architecture diagram is provided.
- No points list is provided.

### Recommendations:

There are no recommendations for this area of work.

## **J. FIRE PROTECTION ASSESSMENT**

There is no required change in the size of the room and therefore no change is required to the fire protection design.

**END OF EVALUATION**





# PALO ALTO DIVISION VAMC

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Palo Alto, CA 94304

## SOMATOM FORCE



Contents:

Sheet No.	Description
A-101	EQUIPMENT PLAN-LEGEND, DETAILS AND NOTES
A-102	CLEARANCE PLAN-CONTROL RM. ELEV., DETAILS, NOTES
S-101	STRUCTURAL FLOOR PLAN-DETAILS AND NOTES
S-102	STRUCTURAL CEILING PLAN-DETAILS AND LEGEND
E-101	ELECTRICAL PLAN(S)-LEGEND AND NOTES
E-102	ELECTRICAL PLAN-LEGEND AND NOTES
E-501	ELECTRICAL DETAILS, POWER DIAGRAM & REQUIREMENTS
M-101	MECHANICAL PLAN-DETAILS AND NOTES

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Planner  
Joel Dramis

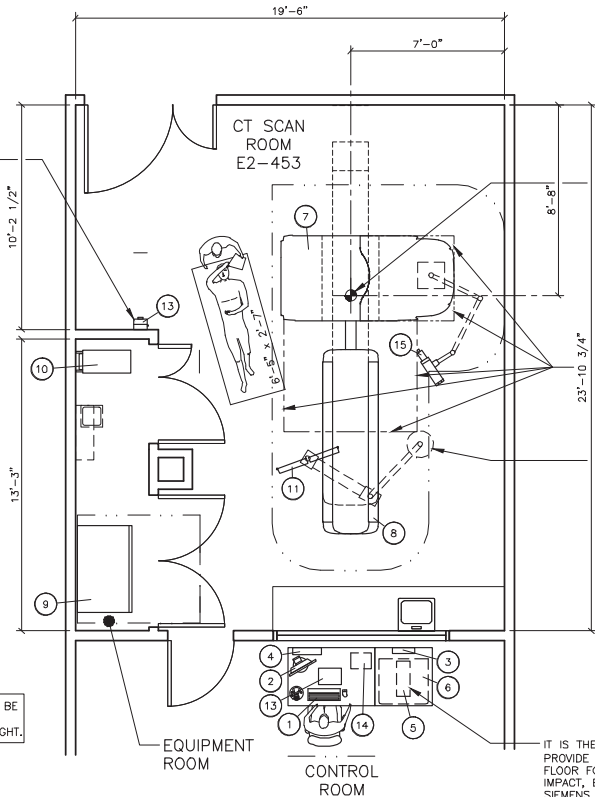
Project #: 1401829

**SIEMENS**  
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THIS SET OF FINAL DRAWINGS IS REFLECTIVE OF THE LATEST SALES CONFIGURATION. ANY CHANGES TO THIS SALES CONFIGURATION MAY REQUIRE A REVISION TO THIS PROJECT PLAN. IF REQUESTED, SIEMENS WILL PRODUCE A REVISED SET OF FINAL DRAWINGS TO REFLECT THE CHANGES, HOWEVER SIEMENS IS NOT RESPONSIBLE FOR ANY CONSTRUCTION COSTS ASSOCIATED WITH THE CHANGES THAT OCCUR FROM THIS PLAN MODIFICATION.

SURGE SUPPRESSOR TO BE SUPPLIED BY SIEMENS, LOCATED AND INSTALLED BY CUSTOMER/CONTRACTOR. IF IT IS TO BE RELOCATED, IT MUST BE DEINSTALLED, RELOCATED AND REINSTALLED BY THE CUSTOMER/CONTRACTOR, IF NECESSARY. IT MUST BE LOCATED WITHIN 3'-0" OF THE CIRCUIT BREAKER.



SYNGO.VIA SERVER IS LOCATED BY CUSTOMER, COORDINATED WITH SIEMENS PROJECT MANAGER.

MULTIMODALITY WORKPLACE LOCATED REMOTELY BY THE CUSTOMER/CONTRACTOR.

NO OBSTRUCTION ZONE - THERE SHOULD BE NO CEILING MOUNTED ITEMS THAT HANG BELOW 86" AFF IN THIS AREA TO ALLOW FOR THE COVER OF THE GANTRY TO OPEN UP.

IF THE CEILING HEIGHT IS BELOW 8'-7 1/2" THE OVERHEAD SUPPORT CANNOT BE PLACED CENTERED ABOVE THE GANTRY. IT MUST BE PLACED SO THAT BOTH ARMS OF THE SUPPORT SYSTEM DO NOT REACH OVER THE GANTRY.

RESTRICTIONS: NOT APPLICABLE.  
WARNINGS: DUE TO THE NOISE LEVEL OF THE SIEMENS CABINETS, IT IS RECOMMENDED THAT THE CABINETS BE PLACED IN A SEPARATE EQUIPMENT ROOM.

IT IS THE RESPONSIBILITY OF THE CUSTOMER/CONTRACTOR TO PROVIDE A MEANS OF MOUNTING THE PC TOWER(S) OFF FINISHED FLOOR FOR DAMAGE PROTECTION AGAINST TIP-OVER, FLUIDS, IMPACT, ETC. ADDITIONAL MOUNTING IS NOT NECESSARY IF SIEMENS CONTAINER IS UTILIZED.

HEIGHT OF WINDOW TO BE COORDINATED WITH COUNTERTOP/DESK HEIGHT.

ARCHITECTURAL EQUIPMENT PLAN

SCALE: 1/4" = 1'-0"

ROOM MEASUREMENTS

ALL ROOM MEASUREMENTS AND ROOM DETAIL SPECIFICATIONS MUST BE VERIFIED ON SITE PRIOR TO BEGINNING ANY CONSTRUCTION WORK.

CASEWORK & ACCESSORY NOTES

- ALL CASEWORK IS EITHER EXISTING OR IS TO BE DESIGNED, DETAILED, FURNISHED AND INSTALLED BY THE CUSTOMER AND/OR CONTRACTOR. FOLLOW DESIGN RECOMMENDATIONS INCLUDED HEREWITH, AS THEY ARE ESSENTIAL FOR THE SUCCESSFUL INSTALLATION & OPERATION OF THE SIEMENS EQUIPMENT.
- ALL FURNITURE (CHAIRS, ETC.) FOR THE CONTROL ROOM ARE TO BE PROVIDED BY THE CUSTOMER.

PLANNING REQUIREMENTS

EMERGENCY POWER OFF (EPO) BUTTONS REQUIRED IN CONTROL AREA, EXAMINATION ROOM AND EQUIPMENT AREA.

DOOR (SAFETY) SWITCH REQUIRED ON ALL DOORS ACCESSING THE EXAMINATION ROOM IN ACCORDANCE WITH LOCAL CODES.

ENVIRONMENTAL/POWER AUDIT

AS AN INDICATION OF OUR COMMITMENT TO QUALITY, SIEMENS MAY, AT NO COST TO YOUR FACILITY, CHECK THE OPERATING ENVIRONMENT AFTER SYSTEM TURNOVER TO DETERMINE IF THE REQUIREMENTS FOR TEMPERATURE, HUMIDITY, POWER, AND GROUNDING ARE MET AS PER SIEMENS' PUBLISHED SPECIFICATIONS. SIEMENS WILL GENERATE A WRITTEN REPORT DETAILING THE ENVIRONMENTAL AND ELECTRICAL CONDITION OF THE SITE AFTER TURNOVER AND WILL SHARE THE REPORT WITH YOU. IN THE EVENT WE IDENTIFY ANY ENVIRONMENTAL/POWER DEFICIENCIES AT THE SITE, YOUR FACILITY WILL BE REQUESTED TO CORRECT DEFICIENCIES WITHIN THIRTY (30) DAYS. SHOULD ANY CORRECTIVE ACTIONS BE NECESSARY, AND UPON REQUEST, SIEMENS WILL PROVIDE GUIDANCE IN AN EFFORT TO FACILITATE RESOLUTION. PLEASE BE ADVISED THAT AFTER 30 DAYS NOTICE ANY REPAIR OR MAINTENANCE SERVICES NECESSITATED BY SEVERE DEFICIENCIES WILL FALL OUTSIDE YOUR WARRANTY COVERAGE.

FINISHED ROOM HEIGHT

FOR CT GANTRY ONLY	MINIMUM 7'-6 9/16"
CAREVISION MONITOR/CEILING MOUNT	MIN. 9'-2 5/8" MAX. 11'-2 5/8"

EQUIPMENT LEGEND

NO	DESCRIPTION	SMS SYM	WEIGHT (LBS)	BTU/HR TO AIR	DIMENSIONS (INCHES)			REMARKS
					W	D	H	
1	OPERATING CONSOLE W/KEYBOARD AND CONTROL BOX	⊖	132	43	47 1/4	31 1/2	29 1/4	
2	19" FLAT SCREEN MONITOR ICS	⊖	20	256	16 9/16	8 1/4	16 1/16	ON CONSOLE/COUNTER
3	POWER CONNECTION TERMINAL - ICS	⊖	---	---	---	---	---	
4	DVI SPLITTER - ICS	⊖	---	---	15 3/4	3 15/16	11 13/16	WALL MOUNTED
5	SYNGO ACQUISITION WORKPLACE	⊖	<55	1,707	7 5/16	19	17	OFF FLOOR/IN CONTAINER
6	CONTAINER FOR ICS/IES (OPTION)	⊖	77	---	31 1/2	31 1/2	28 3/8	HOUSING FOR ICS/IES
7	SOMATOM FORCE GANTRY	⊖	5,842	3,412*	94 1/2	47 1/2	78 3/8	*ADDITIONAL HEAT DISSIPATED TO WATER
8	PATIENT TABLE	⊖	1,102	*	30 7/16	100 3/8	40 3/16	*INCLUDED IN THE GANTRY BTU FIGURE
9	POWER DISTRIBUTION CABINET & UPS	⊖	2,425	11,950	47 1/4	29 1/2	71 1/16	UPS LOCATED INSIDE OF BTU FIGURE
10	IMAGE RECONSTRUCTION SYSTEM	⊖	88	4,780	12 1/4	30 5/16	19 5/8	
11	CARE VISION DUAL MONITOR (OPTION)	⊖	157	512	---	---	---	CEILING MOUNTED
12	EATON SURGE PROTECTIVE DEVICE PANEL (OPTION)	⊖	13.5	---	7 1/2	6 11/16	12	WALL MOUNTED
13	MEDRAD DISPLAY CONTROL UNIT (OPTION)	⊖	8	---	12 1/2	9	13 1/2	HEIGHT WITH SCREEN UP
14	MEDRAD BASE UNIT (OPTION)	⊖	14	---	11	8 3/4	11 1/2	UNDER COUNTER ON SHELF
15	CEILING MOUNTED MEDRAD INJECTOR (OPTION)	⊖	106	---	---	---	---	SEE MFG SPECIFICATIONS
16	MULTIMODALITY WORKPLACE COMPUTER (OPTION)	⊖	55	---	19 3/4	10	23 5/8	ON CUSTOMER'S COUNTER
17	MULTIMODALITY WORKPLACE KEYBOARD AND MONITOR (OPTION)	⊖	---	---	---	---	---	ON CUSTOMER'S COUNTER
18	SYNGO.VIA SERVER (TOWER VERSION - OPTION)	⊖	103	3,530	18 1/2	9 3/4	29 1/8	
19	SYNGO VIA KEYBOARD (OPTION)	⊖	5	---	27 1/4	35 1/4	1 3/4	ON CUSTOMER'S COUNTER

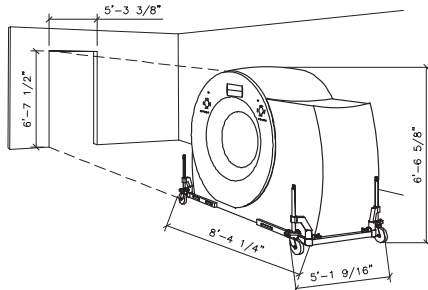
TRANSPORT AND DELIVERY NOTES

TOTAL GANTRY TRANSPORT WEIGHT: 6,448 LBS.

GANTRY WITHOUT TRANSPORT DEVICE: 5,842 LBS.  
TRANSPORT DEVICE: 606 LBS.

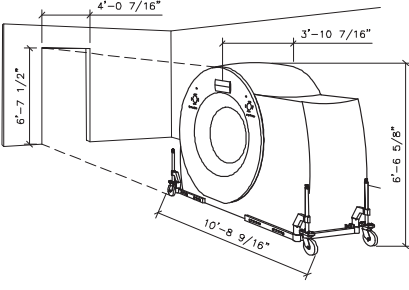
NORMAL TRANSPORT REQUIREMENTS:

DURING THE MOVEMENT OF THE GANTRY THROUGH CORRIDORS THE TRANSPORT CASTERS ARE SWIVELED OUT FOR STABILITY AS SHOWN BELOW. THE MAXIMUM WIDTH IS 5'-1 9/16" AND THE MAX. LENGTH IS 8'-4 1/4" WHEN CASTERS ARE SWIVELED OUT.



NARROW SPACE TRANSPORT REQUIREMENTS:

WHEN TRANSPORTING THE GANTRY THROUGH A NARROW SPACE OR DOORWAY, THE TRANSPORT CASTERS ARE SWIVELED IN AS SHOWN BELOW. THE MAXIMUM WIDTH IS 3'-10 7/16" AND MAXIMUM LENGTH 10'-8 9/16".



NOISE LEVEL

SYSTEM COMPONENT	DECIBEL LEVEL (AT 3'-3" DISTANCE)
GANTRY	<70
PATIENT TABLE	<64
PDC CABINET	≤55
IRS TOWER	≤55
HEAT EXCHANGER - WATER/AIR SPLIT	<60

STATE AGENCY REVIEW

PRIOR TO SIEMENS EQUIPMENT INSTALLATION, APPROVAL OF CONSTRUCTION OR STRUCTURAL MODIFICATIONS UTILIZING X-RAY FOR DIAGNOSTIC OR THERAPEUTIC PURPOSES, MUST BE OBTAINED BY THE CUSTOMER FROM THE APPROPRIATE STATE AGENCY, IF APPLICABLE.

ARCHITECTURAL NOTES

- ALL PRELIMINARY EQUIPMENT LAYOUTS SUBMITTED BY SIEMENS MEDICAL SOLUTIONS, INC. (SMS HEREAFTER) ARE BASED ON THE RECOMMENDED SPACE NECESSARY FOR THE OPERATION AND SERVICEABILITY OF THE EQUIPMENT BEING PROPOSED. SMS WILL NOT SUBMIT AN EQUIPMENT LAYOUT THAT IS NOT IN THE BEST INTEREST OF BOTH THE CUSTOMER AND SMS. ALL EQUIPMENT LAYOUTS ARE BASED EITHER ON AN ACTUAL SITE LOCATION SURVEY OR ARCHITECTURAL DRAWINGS SUPPLIED TO SMS. SMS WILL NOT BE RESPONSIBLE FOR ANY ALTERATIONS THAT ENCROACH WITHIN DESIGNATED SAFETY AND SERVICE CLEARANCE ZONES AS INDICATED ON DRAWINGS (E.G. PIPE CHASES, VENTILATION DUCTS, CASEWORK, AND SOFFITS, ETC.) MADE BY THE CUSTOMER OR REQUIRED BY A CUSTOMER'S ARCHITECTURAL FIRM ONCE PRELIMINARY DRAWINGS HAVE BEEN SUBMITTED AND APPROVED. DO NOT ALTER ANY SPECIFICATIONS AND/OR DIMENSIONS WITHOUT CONTACTING AND RECEIVING WRITTEN CONFIRMATION FROM SMS PROJECT MANAGER.
- SMS IS NOT AN ARCHITECTURAL OR ENGINEERING FIRM. DRAWINGS SUPPLIED BY SMS ARE NOT CONSTRUCTION DRAWINGS. THEREFORE, THESE DRAWINGS ARE TO BE USED ONLY FOR INFORMATION TO COMPLEMENT ACTUAL CONSTRUCTION DRAWINGS AVAILABLE FROM A CUSTOMER APPOINTED ARCHITECTURAL REPRESENTATIVE OR A CUSTOMER'S ENGINEERING DESIGN GROUP. THE CUSTOMER'S ARCHITECT AND GENERAL CONTRACTOR SHALL BE ULTIMATELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE CODES AND PROFESSIONAL DESIGN REQUIREMENTS.
- THE CUSTOMER IS RESPONSIBLE FOR ALL ROOM AND AREA PREPARATION COSTS, PROFESSIONAL FEES, PERMITS, REPORTS, AND INSPECTION FEES.
- EQUIPMENT WARRANTIES, EXPRESSED OR IMPLIED ON THE PART OF SMS SHALL BE CONTINGENT UPON STRICT COMPLIANCE WITH THE ARCHITECTURAL, STRUCTURAL, ELECTRICAL, MECHANICAL AND RECOMMENDATIONS AND REQUIREMENTS CONTAINED IN THESE DRAWINGS, UNLESS SPECIFIED OTHERWISE.
- ALL DIMENSIONS SHOWN ARE TAKEN FROM FINISHED SURFACES UNLESS SPECIFIED OTHERWISE.
- THIS DRAWING DOES NOT PROVIDE RADIATION SHIELDING REQUIREMENTS FOR X-RAY AND ASSOCIATED EQUIPMENT. THE CUSTOMER IS RESPONSIBLE FOR CONSULTING WITH A REGISTERED RADIATION PHYSICIST. ACTUAL PROTECTION REQUIREMENTS SHALL BE SPECIFIED BY A REGISTERED RADIATION PHYSICIST AT CUSTOMER'S ENGAGEMENT AND EXPENSE. RESPONSIBILITY FOR ALL INFORMATION AS TO THE ROOM LOCATION, USE, AND NUMBER OF ANTICIPATED EXAMINATIONS TO BE PERFORMED PER TIME PERIOD SHALL BE PROVIDED TO THE PHYSICIST BY THE CUSTOMER. THE CUSTOMER SHALL FURTHER TAKE ALL RESPONSIBILITY IN THE COMMUNICATION AND COORDINATION OF ACTIVITIES OF THE RADIATION PHYSICIST AND THE ARCHITECTURAL REPRESENTATIVE.
- SMS SHALL BE RESPONSIBLE FOR SMS EQUIPMENT INSTALLATION AND CALIBRATION, CONNECTION AND INSTALLATION OF SMS PROVIDED CABLES, AND CONNECTION OF CONTRACTOR PROVIDED WIRES TO SMS EQUIPMENT. IN THE EVENT THAT SPECIFIC TRADE RULES OR LICENSE REQUIREMENTS PROHIBIT THIS, THE CUSTOMER SHALL INITIATE THE SERVICES OF APPROVED OTHER CONTRACTORS AND PAY FOR SELECTED, APPROVED PARTIES TO PERFORM THIS WORK WITH JOB SUPERVISION TO BE PROVIDED BY SMS. CALIBRATION WHEN ACCOMPLISHED OUTSIDE OF NORMAL INSTALLATION SEQUENCES DUE TO CONTRACTOR OR TRADE RULE ACTIONS OR REQUIREMENTS SHALL BE SUPPORTED BY, CHARGED TO, AND ACCEPTED BY THE CUSTOMER AS AN ADDITIONAL INSTALLATION EXPENSE.
- THE CUSTOMER SHALL VERIFY WITH SMS PROJECT MANAGER FINAL INSTALLATION DRAWINGS THE LOCATIONS AND TRAVEL OF ALL ANCILLARY EQUIPMENT TO BE CEILING OR WALL MOUNTED (E.G. O.R. LIGHTS, MEDICAL GAS COLUMNS, PHYSIOLOGICAL MONITORING INJECTORS, CRT PLATFORMS, SPRINKLER HEADS, SMOKE DETECTORS, ELECTRICAL OUTLETS, HVAC GRILLES, SPEAKERS, AND GENERAL ROOM LIGHTING, ETC.).
- THE GENERAL CONTRACTOR/CUSTOMER SHALL BE RESPONSIBLE FOR ALL FINAL PAINT, TOUCH-UP AND ANY COSMETIC OR TRIM WORK WHICH NEEDS TO BE OR IS REQUIRED TO BE COMPLETED AFTER THE INSTALLATION OF THE SMS EQUIPMENT AND ANY ASSOCIATED SUPPORT APPARATUS.

SITE READINESS GUIDELINES

- THE FOLLOWING GENERAL CONDITIONS ARE NECESSARY TO HAVE THE STATUS OF "READY SITE":
- PROPER POWER AVAILABLE AT SIEMENS EQUIPMENT POWER CABINET LOCATION AND ALL POWER OUTLETS FUNCTIONING.
  - AIR CONDITIONING/HUMIDIFICATION SYSTEMS COMPLETE, TESTED, AND FUNCTIONING PROPERLY ACCORDING TO SIEMENS SPECIFICATIONS.
  - PROPER LIGHTING INSTALLED AND FUNCTIONING.
  - PLUMBING COMPLETE EXCEPT FOR ANY FINAL CONNECTIONS TO SIEMENS EQUIPMENT.
  - ALL CABLE TRAYS/DUCTS/CONDUITS CORRECTLY SIZED, LOCATED, AND INSTALLED ACCORDING TO THE SIEMENS DRAWINGS.
  - ALL REINFORCEMENT PLATES/UNISTRUT INSTALLED AS REQUIRED.
  - ROOM FOR EQUIPMENT INSTALLATION AND IMMEDIATE VICINITY IS DUST-FREE AND IS TO REMAIN SO FOR THE DURATION OF THE INSTALLATION.
  - A SECURE AREA (APPROXIMATELY 10' x 10') IS AVAILABLE AT EQUIPMENT DELIVERY FOR PARTS AND INSTALLATION TOOLS.
  - CUSTOMER SUPPLIED CAMERAS AND PROCESSORS INSTALLED.
  - CUSTOMER APPROVAL FOR SIEMENS REMOTE SERVICES (SRS) CONNECTION, AND CUSTOMER'S IT, CONTACT INFORMATION AND IP ADDRESSES ESTABLISHED.
  - WALLS TO BE PRIMED AND PAINTED, FLOORS TO BE TILED EXCEPT IN AREAS OF THE EQUIPMENT BASE PLATES.
- IF THESE CONDITIONS ARE NOT MET, THE SIEMENS PROJECT MANAGER AND THE DESIGNATED SIEMENS INSTALLATION SUPERVISOR SHALL RESCHEDULE THE INSTALLATION START DATE. NOTE: ADDITIONAL COST MAY BE INCURRED BY THE CUSTOMER/CONTRACTOR AND DELIVERY DATES MAY NEED TO BE RESCHEDULED, WHEN THE SIEMENS SITE READINESS GUIDELINES ARE NOT MET.

RESOURCE LIST (SMS USE ONLY)

DESIGNATION	PG NUMBER	DATE
SOMATOM FORCE	C2-058.891.01.02.02	03.14
COMMON CT	CT00-000.891.04.03.02	10.13
COMMON OPTIONS CT	CT00-000.891.03.23.02	03.14

FORCE  
REV 0

SIEMENS

PALO ALTO DIVISION VAMC

3801 MIRANDA AVE (04D), PALO ALTO, CA 94304  
CT SUITE E2-453 - SOMATOM FORCE

PROJECT #:

1401829

SHEET:

A-101

SHEET 1 OF 8

DATE: 08/12/14

DRAWN BY:

J. DRAMIS

THE USE OR REPRODUCTION OF THIS TITLE BLOCK WITHOUT SIEMENS AUTHORIZATION WILL RESULT IN PROSECUTION UNDER FULL EXTENT OF THE LAW.

ALL RIGHTS ARE RESERVED.

SCALE: AS NOTED REF. #1-91J713

08/12/14 R-101A VERSION DATED 05/30/14 APPROVED BY CUSTOMER FOR FINALS

SYM DATE DESCRIPTION

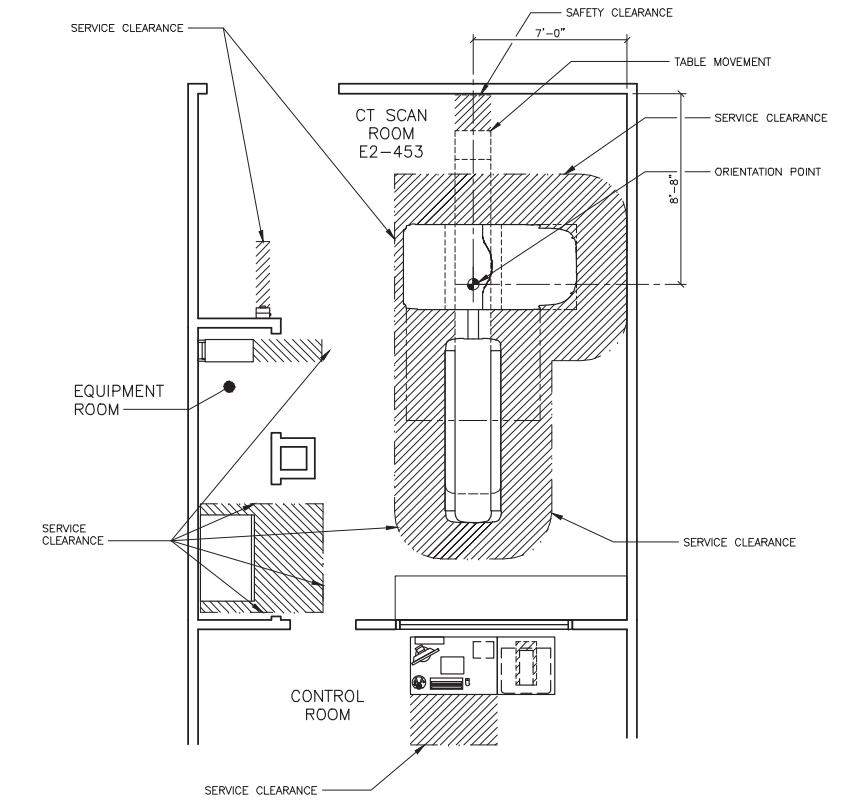
-ISSUE BLOCK-

ATTENTION:

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-THIS SET OF PLANS REPRESENTS A COMPLETE SET OF DETAILS AND SHOULD NOT BE SEPARATED.

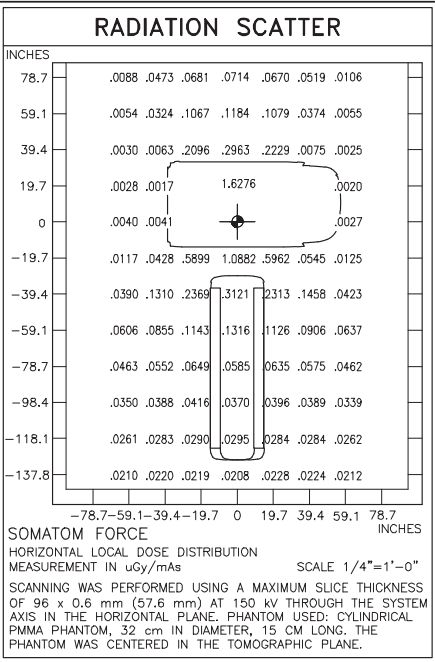
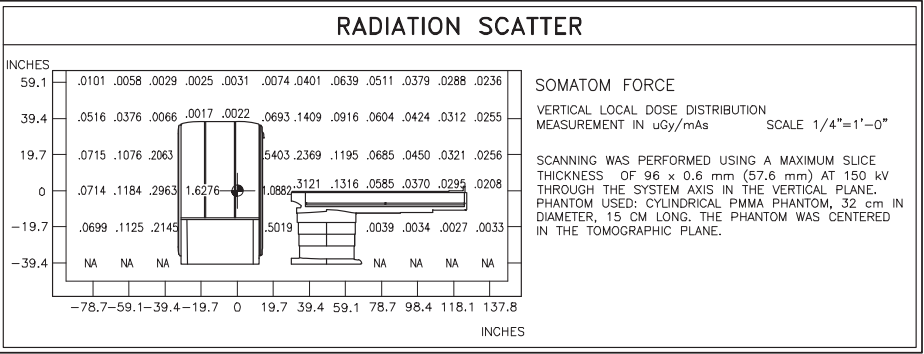
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SAFETY/SERVICE CLEARANCE PLAN

SCALE: 1/4" = 1'-0"



**SAFETY CLEARANCE NOTE**

IF THE SAFETY DISTANCES ARE NOT OBSERVED, SAFETY MEASURES IN ACCORDANCE WITH LOCAL CODES SHOULD BE UTILIZED (FOR EXAMPLE BARRIERS, WARNING SIGNS, AND SAFETY MATS).

**SIEMENS REMOTE SERVICES (SRS)**

TO ENSURE THE UPTIME OF YOUR SYSTEM DURING THE WARRANTY PERIOD (AND BEYOND WITH A SERVICE AGREEMENT), SIEMENS REMOTE SERVICES (SRS) REQUIRES REMOTE LOCAL AREA NETWORK ACCESS TO SIEMENS SYSTEMS.

**SRS REQUIRES ONE OF THE FOLLOWING CONNECTION METHODS:**

**(PREFERRED) VPN CONNECTION**

THE PREFERRED CONNECTION METHOD IS (VPN) VIRTUAL PRIVATE NETWORK (WHERE THE CUSTOMER HAS AVAILABLE A VPN CAPABLE FIREWALL OR OTHER VPN APPLIANCE). THIS METHOD PROVIDES THE POSSIBILITY FOR REMOTE SYSTEM DIAGNOSTICS WITHOUT ADDITIONAL HARDWARE. PLEASE CONTACT SIEMENS REMOTE SERVICES (800-888-SIEM) TO DETERMINE IF THIS METHOD IS SUITABLE FOR YOUR SITE.

**(OPTIONAL) SRS ROUTER CONNECTION**

- THE SRS ROUTER IS SUPPLIED BY SIEMENS AND INSTALLED AT THE CUSTOMER'S SITE, WHILE STILL REMAINING THE PROPERTY OF SIEMENS. THE CUSTOMER'S NETWORK ADMINISTRATOR AND SIEMENS REMOTE SERVICES SHALL DETERMINE THE TYPE AND LOCATION OF THE SRS ROUTER REQUIRED.
- THE SRS ROUTER IS CONNECTED TO AN ANALOG MODEM THAT IS SUPPLIED BY SIEMENS, WHICH THEN IN TURN IS CONNECTED TO AN ANALOG PHONE LINE THAT IS SUPPLIED BY THE CUSTOMER. ONE SRS ROUTER ALLOWS REMOTE DIAGNOSTICS TO MULTIPLE MEDICAL SYSTEMS.
- THE SRS ROUTER SHOULD BE INSTALLED IN A SECURE LOCATION (CUSTOMER'S NETWORK COMPUTER ROOM) THAT HAS LIMITED ACCESS. IT CAN BE LOCATED ON A SHELF, TABLE, OR IN A CABINET. THE CONNECTION CABLES (WITH INDICATED LENGTHS BELOW) ARE INCLUDED WITH DELIVERY.

**SRS ROUTER CONNECTION DIAGRAM**

NOTE: ALL POWER OUTLETS ARE SUPPLIED/INSTALLED BY CUSTOMER.

- ① ETHERNET SWITCH OR HUB, SUPPLIED BY CUSTOMER
- ② SRS ROUTER, SUPPLIED BY SIEMENS (SIZE: 11.2"W X 8.7"D X 5.5"H, WEIGHT: 2 LBS.)
- ③ ANALOG MODEM, SUPPLIED BY SIEMENS
- ④ ANALOG PHONE LINE, SUPPLIED BY CUSTOMER

\* OPTIONAL SWITCH AND CABLES ARE NOT INCLUDED, BUT CAN BE ORDERED FROM SIEMENS.

**SIEMENS REMOTE SERVICE** SCALE: NONE

FINISHED ROOM HEIGHT	
FOR CT GANTRY ONLY	MINIMUM 7'-6 9/16"
CAREVISION MONITOR/CEILING MOUNT	MIN. 9'-2 5/8" MAX. 11'-2 5/8"

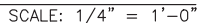
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PROJECT MANAGER: JASON AXELROD TEL: (415) 361-9137 VMAIL: EXT: FAX: EMAIL: jason.axelrod@siemens.com		<b>SIEMENS</b>	
<b>PALO ALTO DIVISION VAMC</b> 3801 MIRANDA AVE (04D), PALO ALTO, CA 94304 CT SUITE E2-453 - SOMATOM FORCE			
THE USE OR REPRODUCTION OF THIS TITLE BLOCK WITHOUT SIEMENS AUTHORIZATION WILL RESULT IN PROSECUTION UNDER FULL EXTENT OF THE LAW.		PROJECT #: <b>1401829</b>	
ALL RIGHTS ARE RESERVED.		SHEET 2 OF 8 DRAWN BY: J. DRAMIS	
SCALE: AS NOTED		DATE: 08/12/14	
REF. #1-91J713		SHEET: <b>A-102</b>	



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**SIEMENS**

PALO ALTO DIVISION VAMC

3801 MIRANDA AVE (04D), PALO ALTO, CA 94304  
ST QUITE SQ 157, COMPTON, CALIF

PROJECT #:  
**1401829**

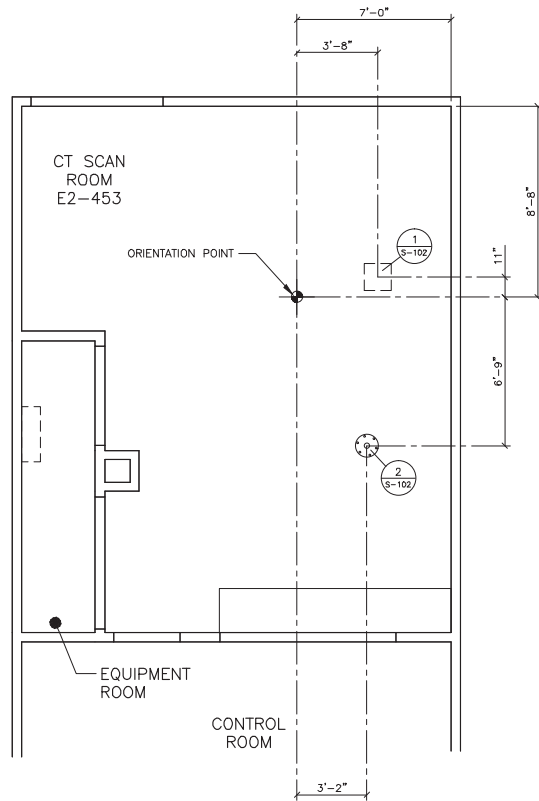
SHEET 3 OF 8	DRAWN BY: J. DRAMI
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DATE: 08/12/14

S-101

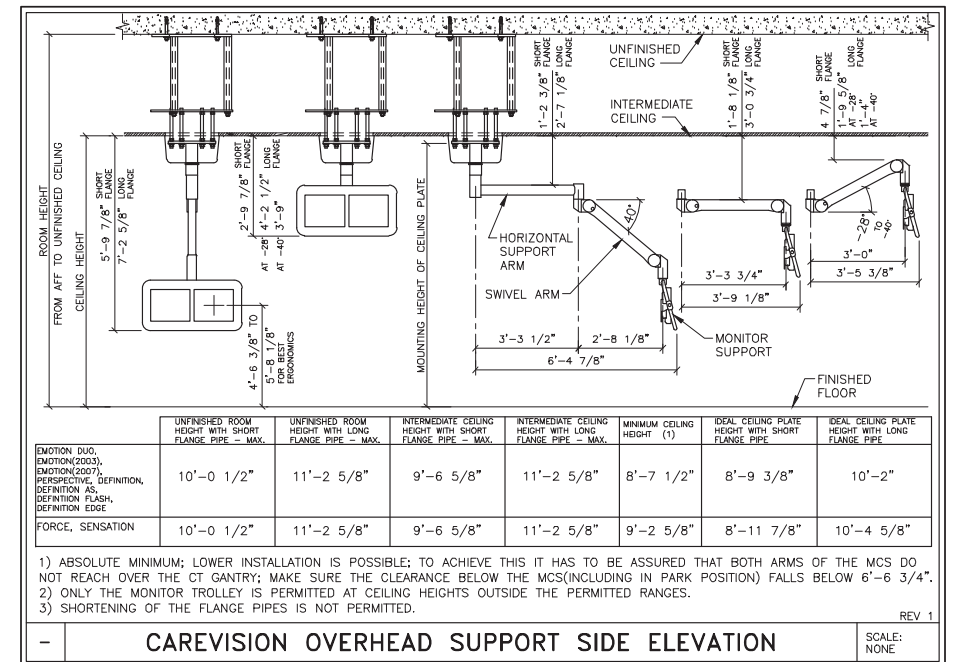
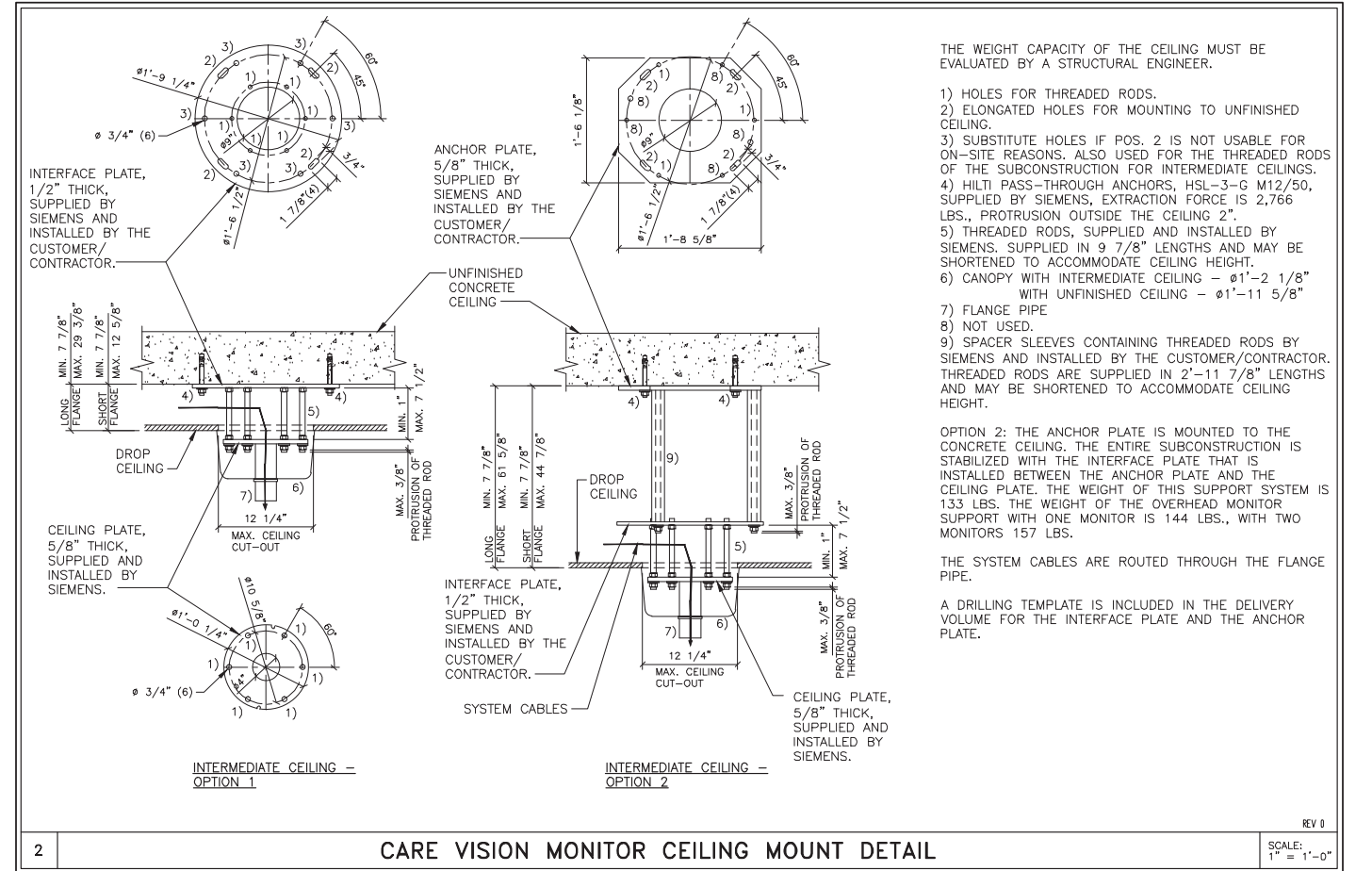
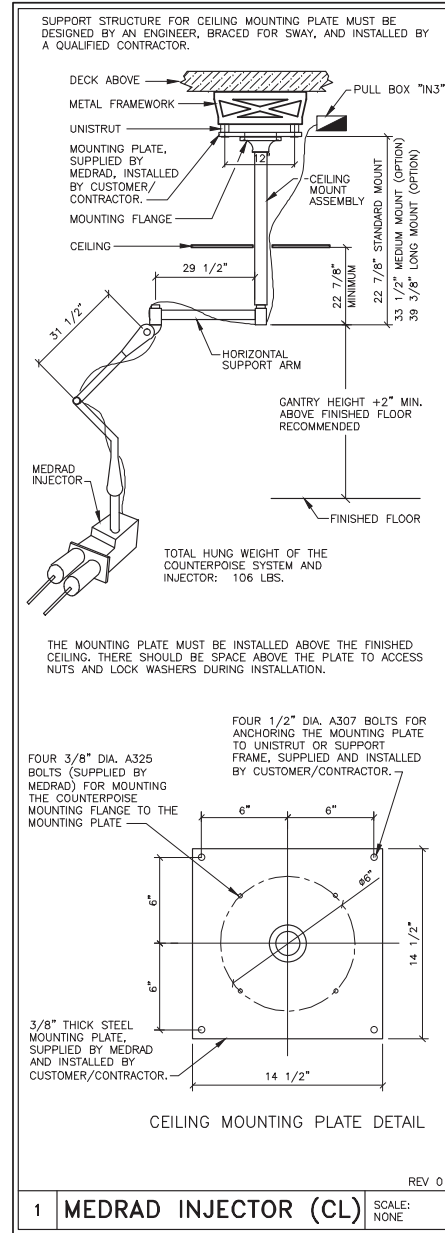


NOTE: FOR THE WEIGHTS OF ALL SIEMENS EQUIPMENT SHOWN ON THIS PLAN, SEE THE "EQUIPMENT LEGEND" ON SHEET A-101.



### STRUCTURAL CEILING PLAN

SCALE:  $1/4" = 1'-0"$



FINISHED ROOM HEIGHT	
FOR CT GANTRY ONLY	MINIMUM 7'-6 9/16"
CAREVISION MONITOR/CEILING MOUNT	MIN. 9'-2 5/8" MAX. 11'-2 5/8"

PROJECT MANAGER: JASON AXELROD  
TEL: (415) 361-9137  
VMAIL: EXT:  
FAX:  
EMAIL: [jason.axelrod@siemens.com](mailto:jason.axelrod@siemens.com)

EXT:

PALO ALTO DIVISION VAMC

3801 MIRANDA AVE (04D), PALO ALTO, CA 94304  
CT SUITE E2-453 - SOMATOM FORCE

CT SUITE E2-453 - SOMATOM FORCE

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PROJECT #:  
**1401829**

SHEET	OF	DRAWN BY:
4	8	J. DRAMIS

EET:  
S-102

SCALE: AS NOTED	REF. #: 1-91J7I
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DATE: 08/12/14

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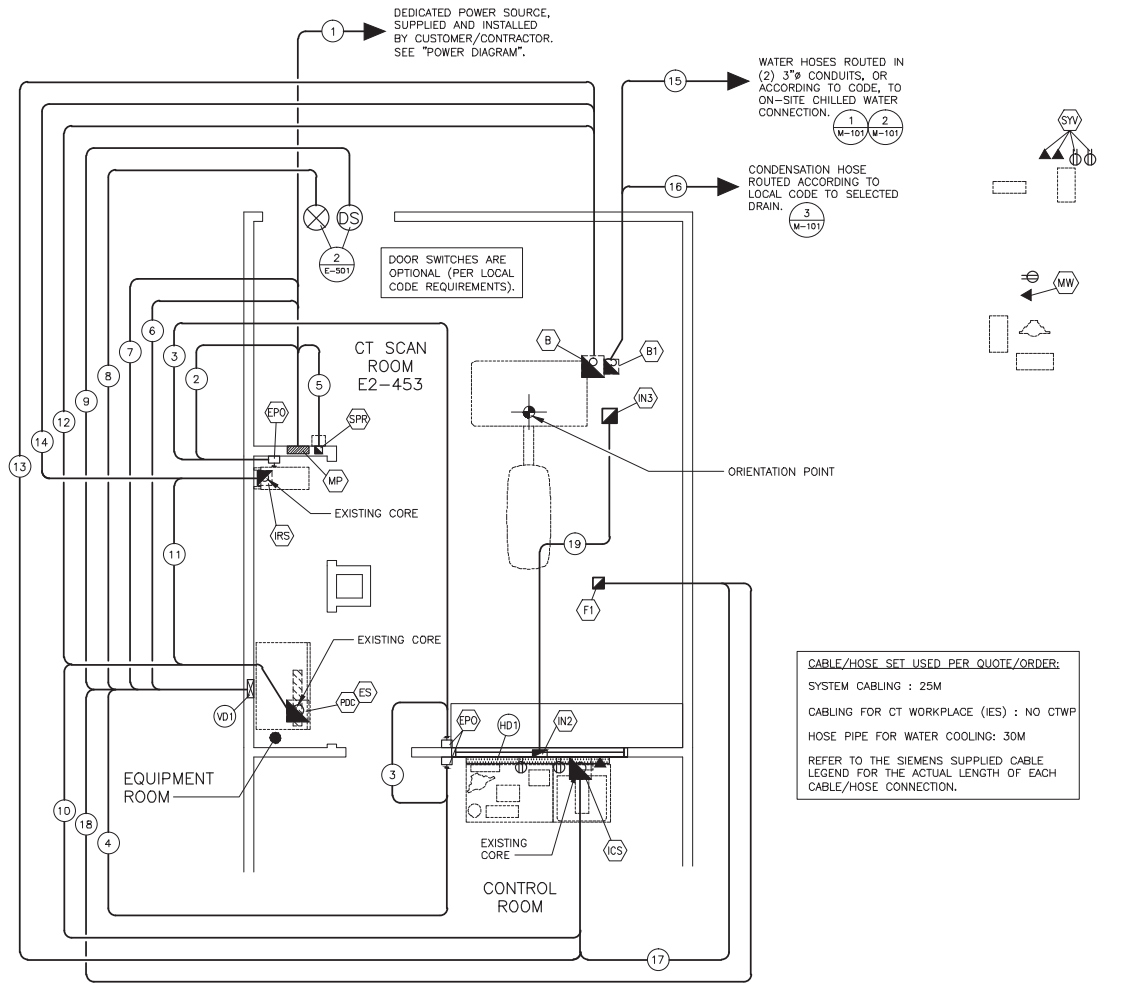
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ELECTRICAL RACEWAY PLAN

SCALE: 1/4" = 1'-0"

SYMBOLS	
ALL MAY NOT APPLY	
	MAIN PANEL OR ENCLOSURE BY CUSTOMER/CONTRACTOR
	OPENING IN RACEWAY OR TRENCH/DUCT
	PULL BOX IN (FLOOR/WALL/CEILING)
	OPENING IN ACCESS FLOORING
	WARNING LIGHT (X-RAY ON)
	DOOR SAFETY SWITCH
	(EPO) EMERGENCY POWER OFF BUTTON
	TRENCH DUCT
	CEILING DUCT
	UNDER FLOOR DUCT
	SURFACE DUCT
	VERTICAL DUCT
	ETHERNET CONNECTION TO CUSTOMER'S INFORMATION SYSTEMS NETWORK (VERIFY WITH SMS PROJECT MANAGER).
	110 VOLT, 20 AMP, HOSPITAL GRADE DUPLEX OUTLET UNLESS OTHERWISE STATED.

SIEMENS SUPPLIED CABLES					
FROM	VIA	TO	DESCRIPTION	REMARKS	
PDC	10	ICS	POWER CABLE; W8:300V, W34:600V DATA CABLE; W61:CAT5 ,W63:CAT 5	MAXIMUM LENGTH 82'-0"	
PDC	11	IRS	POWER CABLE; W7:300V, W33:600V DATA CABLE; W57:CAT5, W65:CAT5	MAXIMUM LENGTH 82'-0"	
PDC	12	B	POWER CABLE; W1:600V, W2:600V, W3:300V, W4:2000V, W9:300V, W54:300V PE CABLE & CONTROL CABLE; W30:600V, W59:600V DATA CABLE; W53:CAT5, W74:FIBER	MAXIMUM LENGTH 82'-0"	
B	13	ICS	CONTROL CABLE; W51:300V	MAXIMUM LENGTH 82'-0"	
B	14	IRS	DATA CABLE; W70:FIBER, W78:FIBER, W98:FIBER	MAXIMUM LENGTH 82'-0"	
ON-SITE WATER CONN.	15	B1	WATER HOSES	MAXIMUM LENGTH 96'-0"	
B1	16	DRAIN	CONDENSATION HOSE	MAXIMUM LENGTH 32'-9"	
ICS	17	F1	CONTROL CABLE	MAXIMUM LENGTH 82'-0"	
PDC	VD1,18	F1	POWER CABLE	MAXIMUM LENGTH 68'-0"	
IN2	19	IN3	INJECTOR CABLE		

CONDUIT LENGTH CALCULATIONS

IF SITE SPECIFIC CONDITIONS EXCEED THE FOLLOWING ASSUMED VALUES THEN ADDITIONAL LENGTH MUST BE SUBTRACTED BY THE ELECTRICAL CONTRACTOR FROM THE MAXIMUM CONDUIT LENGTHS LISTED.

IF DUCT LOCATIONS ARE ALTERED FROM THE SHOWN LAYOUT IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO RECALCULATE THE MAXIMUM CONDUIT LENGTHS.

ASSUMED VALUES USED IN CALCULATING STATED MAXIMUM CONDUIT LENGTHS:

VERTICAL DUCTS - 10'-0"  
FLOOR PENETRATIONS - 3'-0"

ELECTRICAL LEGEND			
SYM	SIZE	DESCRIPTION	REMARKS
B	AS REQUIRED	PULL BOX MOUNTED BELOW FLOOR SLAB WITH A 4" CORE DRILL WITH SLEEVE THROUGH THE SLAB ENDING FLUSH WITH THE FINISHED FLOOR IN SHOWN LOCATION.	GANTRY CABLE ACCESS
B1	AS REQUIRED	PULL BOX MOUNTED BELOW FLOOR SLAB WITH A 4" CORE DRILL WITH SLEEVE AND A 3" CORE DRILL WITH SLEEVE THROUGH THE SLAB ENDING FLUSH WITH THE FINISHED FLOOR IN SHOWN LOCATIONS.	GANTRY HOSE ACCESS
EP	---	EMERGENCY POWER OFF BUTTON. EXACT LOCATIONS TO BE DETERMINED BY CUSTOMER/CONTRACTOR.	SEE POWER SCHEDULE
ES	---	ETHERNET SWITCH FOR ICS, IRS, GANTRY & PDC'S SUPPLIED BY SIEMENS. LOCATED INSIDE PDCA CABINET.	
F1	AS REQUIRED	PULL BOX MOUNTED ABOVE FINISHED CEILING.	CARE VISION MONITOR
CS	AS REQUIRED	PULL BOX MOUNTED BELOW FLOOR SLAB WITH 6" CORE DRILL WITH SLEEVE THROUGH SLAB ENDING FLUSH WITH FINISHED FLOOR IN SHOWN LOCATION.	IMAGE CONSTRUCTION SYS.
IN	AS REQUIRED	PULL BOX MOUNTED FLUSH WITH FINISHED WALL IN CONTROL AREA.	INJECTOR ELECTRONICS
IN2	AS REQUIRED	PULL BOX MOUNTED ABOVE FINISHED CEILING IN SHOWN LOCATION.	CEILING MTD. INJECTOR
IN3	AS REQUIRED	PULL BOX MOUNTED TO UNDERSIDE OF FLOOR SLAB WITH 4" CORE DRILL WITH SLEEVE THROUGH FLOOR SLAB ENDING FLUSH WITH FINISHED FLOOR IN SHOWN LOCATION.	IMAGE RECONSTRUCTION CAB.
MP	3-PHASE	MAIN PANEL WITH MAIN BREAKER. EXACT LOCATION DETERMINED BY CUSTOMER/CONTRACTOR.	SEE POWER SCHEDULE.
MM	---	ETHERNET CONNECTION TO HOSPITAL NETWORK, EXACT LOCATION TO BE COORDINATED WITH SIEMENS PROJECT MANAGER.	MULTIMODALITY WORKSTATION
PD	AS REQUIRED	PULL BOX MOUNTED TO UNDERSIDE OF FLOOR SLAB WITH 6" CORE DRILL WITH SLEEVE THROUGH FLOOR SLAB ENDING FLUSH WITH FINISHED FLOOR IN SHOWN LOCATION.	POWER DISTRIBUTION CAB.
SP	AS REQUIRED	PULL BOX MOUNTED FLUSH WITH FINISHED WALL PROVIDED WITH 2" OPENING IN FINISHED COVER. THE SURGE SUPPRESSOR MUST BE LOCATED WITHIN 3 FEET CABLE RUN FROM CIRCUIT BREAKER, AT HEIGHT DETERMINED BY CUSTOMER/ CONTRACTOR.	SEE DETAIL S-101
SV	----	SYNGO VIA SERVER LOCATION PROVIDED WITH (2)ETHERNET CONNECTIONS TO FACILITY NETWORK AND (2) 110 VOLT DUPLEX OUTLETS..	SYNGO VIA SERVER
10	10" x 3 1/2"	ELECTRICAL DUCT RUN HORIZONTALLY ON THE WALL AT THE FLOOR LINE AND SURFACE MOUNTED ON FINISHED WALL AS SHOWN FOR EXCESS CABLE STORAGE.	RACEWAY
11	10" x 3 1/2"	ELECTRICAL DUCT MOUNTED FLUSH WITH FINISHED WALL IN SHOWN LOCATION PROVIDED WITH FINISHED, REMOVABLE COVERS. TO EXTEND FROM FLOOR LINE TO END ABOVE FINISHED CEILING. DUCT TO BE DIVIDED INTO TWO SECTIONS WITH METAL DIVIDERS.	RACEWAY
1	AS REQUIRED	CONDUIT FROM POWER SOURCE TO "MP" SIZED BY ELECTRICAL ENGINEER OF RECORD.	SEE POWER SCHEDULE
2	AS REQUIRED	CONDUIT FROM "MP" TO "EPO" SIZED BY ELECTRICAL ENGINEER OF RECORD.	SEE POWER SCHEDULE
3	AS REQUIRED	CONDUIT FROM "EPO" TO "EPO" SIZED BY ELECTRICAL ENGINEER OF RECORD.	SEE POWER SCHEDULE
4	AS REQUIRED	CONDUIT FROM "EPO" TO "VD1" (PDC), SIZED BY ELECTRICAL ENGINEER OF RECORD.	SEE POWER SCHEDULE
5	AS REQUIRED	CONDUIT FROM "MP" TO "SPR" SIZED BY ELECTRICAL ENGINEER OF RECORD.	SEE POWER SCHEDULE
6	AS REQUIRED	CONDUIT FROM "MP" TO "VD1" (PDC), SIZED BY ELECTRICAL ENGINEER OF RECORD.	FOR PDCA PART. SEE POWER SCHEDULE
7	AS REQUIRED	CONDUIT FROM "MP" TO "VD1" (PDC), SIZED BY ELECTRICAL ENGINEER OF RECORD.	FOR PDCA PART. SEE POWER SCHEDULE
8	AS REQUIRED	CONDUIT FROM "VD1" (PDC) TO "WARNING LIGHT".	
9	AS REQUIRED	CONDUIT FROM "VD1" (PDC) TO "DS".	
10	2-1/2"	CONDUIT FROM "PDC" TO "ICS".	MAX. CONDUIT LENGTH 76'-0"
11	2"	CONDUIT FROM "PDC" TO "IRS".	MAX. CONDUIT LENGTH 76'-0"
12	(3) 3"	CONDUITS FROM "PDC" TO "B" WITH A MINIMUM 6" BENDING RADIUS.	MAX. CONDUIT LENGTH 76'-0"
13	3"	CONDUIT FROM "B" TO "ICS".	MAX. CONDUIT LENGTH 76'-0"
14	1-1/2"	CONDUIT FROM "B" TO "IRS".	MAX. CONDUIT LENGTH 76'-0"
15	(2) 3"	CONDUITS, IF REQUIRED PER LOCAL CODE, FROM ON-SITE WATER CONNECTION TO "B1". TO CONTAIN SIEMENS COOLING WATER HOSES WITH A MINIMUM 6" BENDING RADIUS.	MAX. CONDUIT LENGTH 93'-0" SEE SHEET M-101
16	1"	CONDUIT, IF REQUIRED PER LOCAL CODE, FOR CONDENSATION HOSE FROM "B1" TO SELECTED DRAIN TYPE. THE MINIMUM BENDING RADIUS IS 1 3/16".	MAX. CONDUIT LENGTH 29'-9"
17	2-1/2"	CONDUIT FROM "ICS" TO "F1".	MAX. CONDUIT LENGTH 79'-0"
18	2-1/2"	CONDUIT FROM "VD1" (PDC) TO "F1".	MAX. CONDUIT LENGTH 58'-0"
19	2-1/2"	CONDUIT FROM "IN2" TO "IN3". VERIFY LENGTH RESTRICTIONS WITH MANUFACTURER.	

CONTRACTOR SUPPLIED CABLES				
FROM	VIA	TO	DESCRIPTION	REMARKS
POWER SOURCE	1	MP	3-PHASE CONDUCTORS, 1 NEUTRAL, 1 GROUND ALL TO BE THE SAME SIZE. SIZED BY ELECTRICAL ENGINEER OF RECORD.	SEE POWER SCHEDULE
MP	2	EPO	DETERMINED BY ELECTRICAL ENGINEER OF RECORD.	SEE POWER SCHEDULE
EPO	3	EPO	DETERMINED BY ELECTRICAL ENGINEER OF RECORD.	SEE POWER SCHEDULE
EPO	4,VD1	PDC	DETERMINED BY ELECTRICAL ENGINEER OF RECORD.	SEE POWER SCHEDULE
MP	5	SPR	3-PHASE CONDUCTORS, 1 NEUTRAL AND 1 GROUND ALL TO BE THE SAME SIZE. SIZED BY ELECTRICAL ENGINEER OF RECORD.	SEE POWER SCHEDULE
MP	6,VD1	PDC	3 PHASE CONDUCTORS, 1 NEUTRAL AND 1 GROUND ALL TO BE THE SAME SIZE, MAX. 3/0. SIZED BY ELECTRICAL ENGINEER OF RECORD.	SEE POWER SCHEDULE
MP	7,VD1	PDC	3 PHASE CONDUCTORS, 1 NEUTRAL AND 1 GROUND ALL TO BE THE SAME SIZE, MAX. 3/0. SIZED BY ELECTRICAL ENGINEER OF RECORD.	SEE POWER SCHEDULE
PDC	VD1,8	WARNING LIGHT	DETERMINED BY ELECTRICAL ENGINEER OF RECORD.	
PDC	VD1,9	DS	DETERMINED BY ELECTRICAL ENGINEER OF RECORD.	

ELECTRICAL NOTES

1) COMPLIANCE: ELECTRICAL WORK SHALL BE IN COMPLIANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEPA-70), O.S.H.A. REGULATIONS, AS WELL AS APPLICABLE REGULATIONS OF CITY, COUNTY, STATE AND FEDERAL AGENCIES. PROVIDE MATERIALS AND EQUIPMENT THAT COMPLY TO ANSI, IEEE AND NEMA STANDARDS. WHERE APPLICABLE, PROVIDE ONLY MATERIALS AND PRODUCTS THAT ARE U.L. LISTED AND LABELED. CUSTOMER'S/CONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF NECA STANDARD OF INSTALLATION.

2) QUALITY ASSURANCE: THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN THE FIELD TO INSURE THAT THE NEW WORK WILL FIT TO THE EXISTING STRUCTURE AS SHOWN ON THE DRAWINGS. SHOULD ANY CONDITIONS EXIST OR BE DISCOVERED THAT PREVENT THE INSTALLATION OF WORK AS SHOWN, THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE PRIOR TO FABRICATION OF EQUIPMENT, OR THE PERFORMANCE OF ANY WORK THAT MAY BE AFFECTED. DO NOT ALTER DRAWINGS, DIMENSIONS, OR SPECIFICATIONS IN ANY WAY WITHOUT CONTACTING AND RECEIVING WRITTEN CONFIRMATION FROM SMS PROGRAM MANAGER. ALL DIMENSIONS ARE FROM FINISHED SURFACES. CONDUIT AND PULL BOXES TO BE INSTALLED BY THE CUSTOMER/CONTRACTOR WITH LOCATIONS BEING FIELD VERIFIED BY SMS PROJECT MANAGER.

3) POWER SUPPLY SOURCE: POWER SUPPLIES FOR SIEMENS MEDICAL SOLUTIONS EQUIPMENT SHALL BE DEDICATED SERVICES KEPT ENTIRELY FREE AND INDEPENDENT OF ALL OTHER BUILDING WIRING AND EQUIPMENT, SUCH AS: ELEVATORS, GENERATORS, PUMPS, HVAC SYSTEMS, ETC. THE CONTRACTOR SHALL COORDINATE THIS WORK WITH THE CUSTOMER/UTILITY COMPANY FIELD REPRESENTATIVE.

4) WORK FURNISHED BY CUSTOMER/CONTRACTOR: WORK NOT PROVIDED BY SIEMENS MEDICAL SOLUTIONS BUT SHOWN ON DRAWINGS TO BE FURNISHED AND INSTALLED BY CUSTOMER/CONTRACTOR INCLUDES THE FOLLOWING BUT IS NOT LIMITED TO UNLESS NOTED OTHERWISE: ELECTRICAL RACEWAYS AND DUCTS, WIRING TRIGGERS, PULL BOXES, CONDUITS, CIRCUIT BREAKERS, EMERGENCY OFF BUTTONS, DOOR SWITCHES, WARNING LIGHTS, WIRING DEVICES, CONNECTORS, LIGHTING EQUIPMENT AND GROUNDING.

5) RACEWAY AND CONDUIT NOTES: RACEWAY SHALL BE ELECTRIC METALLIC TUBING (EMT) FOR RIGID CONDUIT WORK, OR WHERE SHORT OFF-SET CONNECTIONS ARE REQUIRED LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL BE USED. FIELD BENDS SHALL NOT BE LESS THAN AS SHOWN IN TABLE 346-10 OF THE NATIONAL ELECTRICAL CODE. PROVIDE A JETLINE "SUPER TRUE TAPE" OR EQUIVALENT CONDUIT MEASURING TAPE FISH LINE IN ALL RACEWAYS AND CONDUITS. CONDUIT BODIES SHALL NOT BE USED. WHERE A CONDUIT ENTERS A BOX, FITTING, OR OTHER ENCLOSURE, AN INSULATED THROAT CONNECTOR SHALL BE PROVIDED TO PROTECT THE WIRE FROM ABRASION. CONNECTORS SHALL BE DOUBLE SET SCREW TYPE, STEEL CONCRETE TIGHT.

KEEP RACEWAYS AT LEAST 6 INCHES AWAY FROM PARALLEL RUNS OF FLUES OR STEAM AND HOT WATER PIPES. INSTALL RACEWAY RUNS ABOVE WATER AND STEAM PIPES PROVIDED THAT CABLE RUN DISTANCES ARE MAINTAINED. USE TEMPORARY CLOSURES TO PREVENT FOREIGN MATTER FROM ENTERING RACEWAY.

CONDUIT RUNS ARE SHOWN SCHEMATICALLY. INSTALL CONDUIT WITH A MINIMUM OF BENDS IN THE SHORTEST PRACTICAL DISTANCE. CONSIDERING THE BUILDING CONSTRUCTION AND OBSTRUCTIONS, EXCEPT AS OTHERWISE INDICATED, THE CONTRACTOR SHALL MAKE CERTAIN THAT ANY CONDUIT/RACEWAY RUNS CONTAINING SIEMENS MEDICAL SYSTEMS CABLES DO NOT EXCEED THE SPECIFIED MAXIMUM DISTANCES AS SHOWN ON THE ELECTRICAL DETAILS.

PROVIDE ENCLOSED METAL RACEWAY SYSTEM (WIRE DUCT) WHERE SHOWN ON DRAWINGS WITH DIVIDERS TO SEPARATE THE DUCT (FOR POWER AND SIEMENS MEDICAL SOLUTIONS CABLES), DIVIDERS AND CROSSOVER PIECES TO BE PROVIDED AS NECESSARY. FOR UL CERTIFIED SYSTEMS, THE CABLE TO CABLE AS WELL AS THE CIRCUIT TO CIRCUIT SEPARATION REQUIREMENT WAS EVALUATED DURING THE UL SYSTEM INVESTIGATION OF THIS EQUIPMENT. ADDITIONAL SEPARATION OF THE SYSTEM CABLE ASSEMBLIES INTO SEPARATE OR PARTITIONED RACEWAYS, UNLESS OTHERWISE NOTED, IS NOT NECESSARY TO INSURE SEPARATION OF CIRCUITS, AS THEY CAN BE IN THE SAME RACEWAY.

PROVIDE WIRE DUCT/RACEWAY WITH ACCESSIBLE REMOVABLE COVERS. LOCATIONS OF OPENINGS TO BE CUT IN FIELD ARE TO BE COORDINATED WITH SIEMENS PROJECT MANAGER. ELECTRICAL PULL BOXES AND RACEWAY COVERS SHALL BE INSTALLED IN A MANNER TO ALLOW ACCESSIBILITY FOR INSTALLATION AND MAINTENANCE. IN- FLOOR TRENCH DUCT AND FLUSH FLOOR BOXES SHALL BE PROVIDED WITH FULLY GASKETED REMOVABLE COVERS.

6) WIRING: WIRING SHALL BE INSTALLED IN METAL RACEWAY, 600 VOLT CLASS, STRANDED TYPE THHN-THWN, SINGLE CONDUCTOR ANNEALED COPPER FOR A MAXIMUM OPERATING TEMPERATURE OF 75° C (165° F), SIZED AS INDICATED. THE CUSTOMER/CONTRACTOR SHALL LEAVE MINIMUM 10 FT. WIRE TAILS AT ALL OUTLET POINTS WITH WIRE IDENTIFICATION TAGGED AT BOTH ENDS FOR FINAL CONNECTION BY SIEMENS MEDICAL SOLUTIONS.

7) IN ADDITION TO THE CIRCUIT BREAKER LOAD CURRENT RATING, CONSIDERATION MUST ALSO BE GIVEN TO SELECTING CIRCUIT BREAKERS THAT HAVE A HIGH ENOUGH SHORT CIRCUIT CURRENT WITHSTAND RATING TO SAFELY COORDINATE WITH THE POWER SYSTEM AVAILABLE SHORT CIRCUIT CURRENT. GENERALLY, WHEN THE 480 VOLT, 3 PHASE, X-RAY EQUIPMENT IS SERVED FROM A POWER SUPPLY SYSTEM THAT IS PROVIDED WITH A 500 KVA OR SMALLER TRANSFORMER, A STANDARD 14,000 RMS AMPERE WITHSTAND RATED CIRCUIT BREAKER WILL BE ADEQUATE. HOWEVER, IF THE POWER SUPPLY SYSTEM TRANSFORMER IS LARGER THAN 500 KVA, THEN THE CIRCUIT BREAKERS HAVING A SHORT CIRCUIT WITHSTAND RATING GREATER THAN 14,000 RMS AMPERES MAY BE REQUIRED.

POWER QUALITY

POOR POWER WILL ALTER EQUIPMENT PERFORMANCE

IT IS IN THE CUSTOMER'S INTEREST THAT THE ELECTRICAL CONTRACTOR BE RESPONSIBLE FOR TESTING AND VERIFYING THAT THE EQUIPMENT POWER SUPPLY COMPLIES WITH THE SIEMENS SPECIFICATIONS.

FINISHED ROOM HEIGHT

FOR CT GANTRY ONLY	MINIMUM 7'-6 9/16"
CAREVISION MONITOR/CEILING MOUNT	MIN. 9'-2 5/8" MAX. 11'-2 5/8"

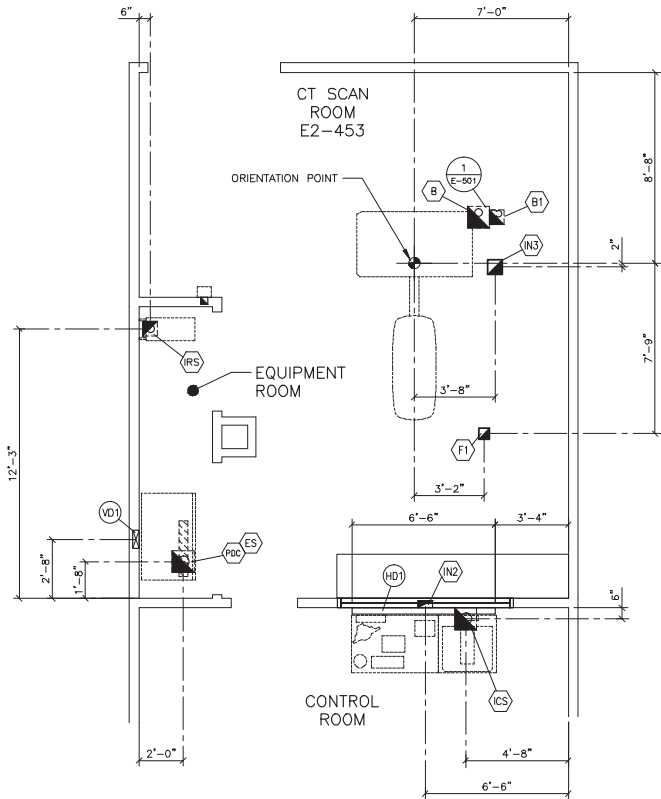
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ALL DIMENSIONS SHOWN ON THIS DRAWING ARE FROM FINISHED SURFACES. THIS DRAWING DOES NOT PROVIDE RADIATION SHIELDING REQUIREMENTS FOR X-RAY AND ASSOCIATED EQUIPMENT. THE CUSTOMER IS RESPONSIBLE FOR CONSULTING WITH A REGISTERED RADIATION PHYSICIST TO SPECIFY RADIATION PROTECTION.

ATTENTION:

THIS DRAWING IS DESIGNED TO CONFORM TO FEATURES AND EQUIPMENT REQUIREMENTS PRESENTED AT THE TIME OF THEIR PREPARATION. SINCE BOTH THESE FACTORS ARE SUBJECT TO DESIGN MODIFICATION, THEY ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES.  
THIS SET OF PLANS REPRESENTS A COMPLETE SET OF DETAILS AND SHOULD NOT BE SEPARATED.

PROJECT MANAGER: JASON AXELROD TEL: (415) 361-9137 VMAIL: FAX: EMAIL: jason.axelrod@siemens.com		EXT:			
SIEMENS					
PALO ALTO DIVISION VAMC					
3801 MIRANDA AVE (04D), PALO ALTO, CA 94304 CT SUITE E2-453 - SOMATOM FORCE					
THE USE OR REPRODUCTION OF THIS TITLE BLOCK WITHOUT SIEMENS AUTHORIZATION WILL RESULT IN PROSECUTION UNDER FULL EXTENT OF THE LAW.		PROJECT #: 1401829			
ALL RIGHTS ARE RESERVED.		SHEET: 5 OF 8 DRAWN BY: J. DRAMIS			
SCALE: AS NOTED		DATE: 08/12/14			
REF: #1-91J713		E-101			



ELECTRICAL DIMENSION PLAN  
SCALE: 1/4" = 1'-0"

FINISHED ROOM HEIGHT	
FOR CT GANTRY ONLY	MINIMUM 7'-6 9/16"
CAREVISION MONITOR/CEILING MOUNT	MIN. 9'-2 5/8" MAX. 11'-2 5/8"

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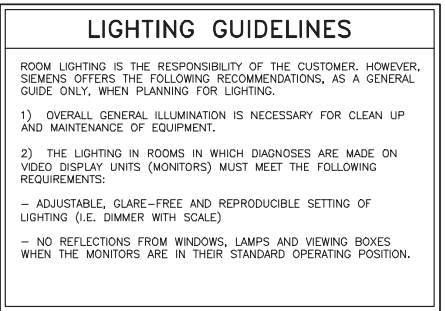
		PROJECT MANAGER: JASON AXELROD TEL: (415) 361-9137 VMAIL: EXT: FAX: EMAIL: jason.axelrod@siemens.com		<b>SIEMENS</b>	
		<b>PALO ALTO DIVISION VAMC</b> 3801 MIRANDA AVE (04D), PALO ALTO, CA 94304 CT SUITE E2-453 — SOMATOM FORCE			
		THE USE OR REPRODUCTION OF THIS TITLE BLOCK WITHOUT SIEMENS AUTHORIZATION WILL RESULT IN PROSECUTION UNDER FULL EXTENT OF THE LAW.		PROJECT #: <b>1401829</b>	
		ALL RIGHTS ARE RESERVED.		SHEET 6 OF 8 DRAWN BY: J. DRAMIS	
		SCALE: AS NOTED		REF. #1-91J713	
		DATE: 08/12/14		DATE: 08/12/14	
		—ISSUE BLOCK—			

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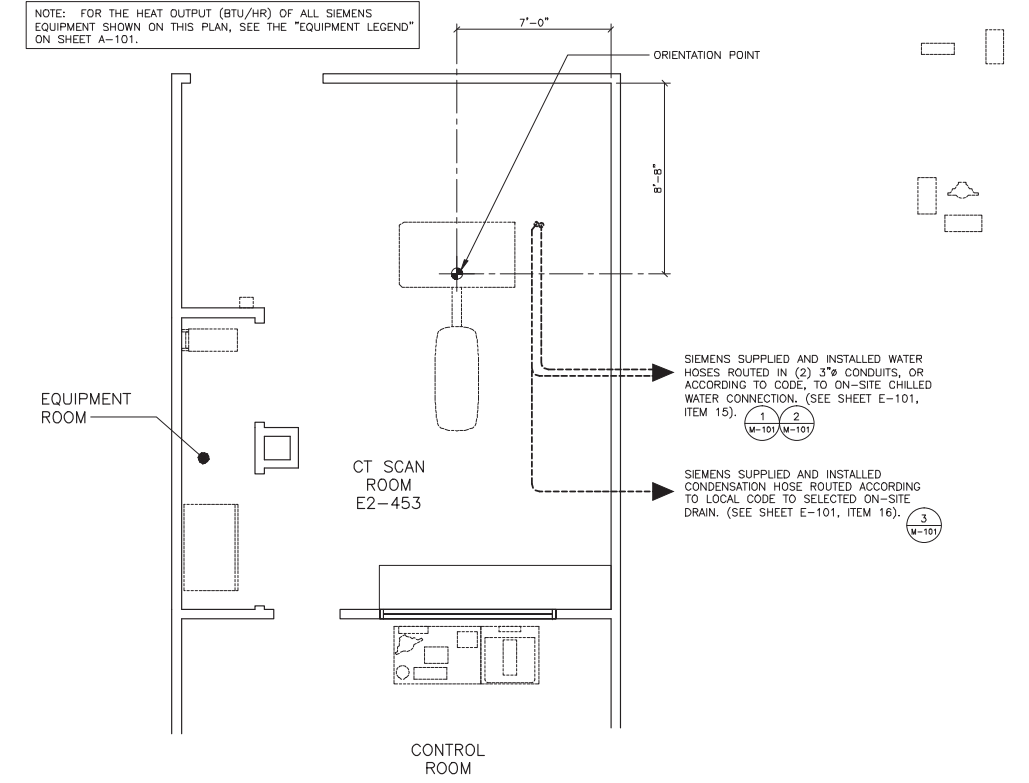
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REFERENCE DOCUMENT - NOT FOR CONSTRUCTION





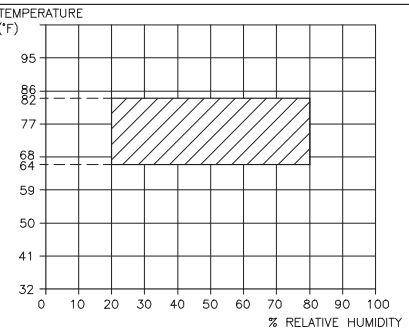
			PROJECT MANAGER: JASON AXELROD TEL: (415) 361-9137 VMAIL: EXT: FAX: EMAIL: jason.axelrod@siemens.com		<b>SIEMENS</b>	
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R-1019A VERSION DATED 05/30/14 APPROVED BY CUSTOMER FOR FINALS			SHEET 7 OF 8		DRAWN BY: J. DRAMIS	
SCALE: AS NOTED			REF. #: 91J713		DATE: 08/12/14	
-ISSUE BLOCK-						



MECHANICAL PLAN

SCALE: 1/4" = 1'-0"

ENVIRONMENTAL REQUIREMENTS



TEMPERATURE, HUMIDITY, DUST, AIR CONTAMINATION: REFER TO THE CLIMATOGRAM ABOVE FOR THE SPECIFIED CLIMATE RANGE.

THE MAXIMUM TEMPERATURE GRADIENT IS 6 K/HR.

THE ENVIRONMENTAL REQUIREMENTS FOR THE OPERATOR AND THE SYSTEM IS 64 TO 82 °F WITH A RELATIVE HUMIDITY OF 20-80% AND A BAROMETRIC PRESSURE OF 10.2 TO 15.4 PSI.

EXTERIOR AIR VENTS SHOULD BE EQUIPPED WITH A FILTRATION SYSTEM OF THE FILTER CLASS MERV 8 TO FILTER DUST PARTICLES >10 µm.

THE ROOM AIR SHOULD BE PROTECTED AGAINST CONTAMINATION BY HYDROGEN SULPHIDE, EVEN IN SMALL AMOUNTS. IF A DANGER OF SUCH CONTAMINATION EXISTS, CORRECTIVE ACTIONS HAVE TO BE TAKEN. E.G., EXTRACTOR FANS, SIPHON, MODIFICATION OF VENTILATION INTAKE, ETC..

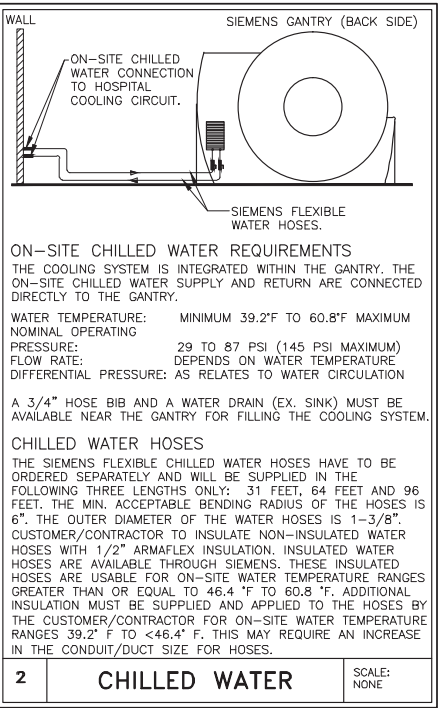
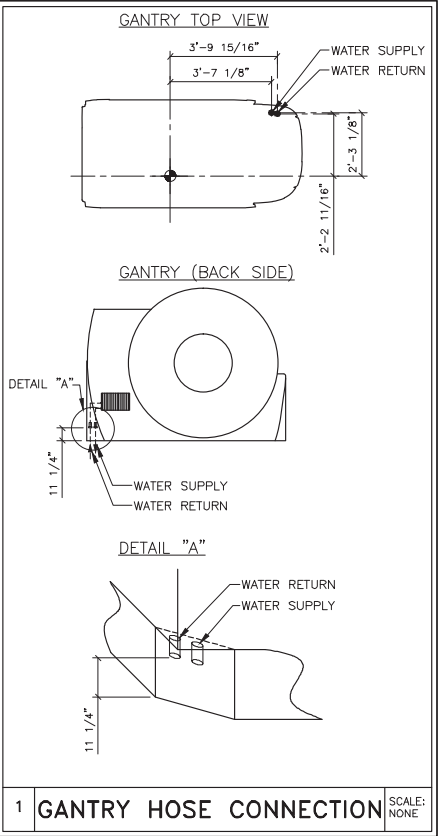
TECHNICAL DATA

WATER SUPPLY RATE	SEE WATER FLOW RATE DIAGRAM
TEMPERATURE RANGE OF WATER	MINIMUM 39.2°F TO 60.8°F MAXIMUM
TEMPERATURE GRADIENT OF WATER	MAXIMUM 1 K/MINUTE
BTU DISCHARGE TO THE WATER	58,045 BTU/HR
NOMINAL OPERATING PRESSURE	29 TO 87 PSI (145 PSI MAXIMUM) (1)
FILTRATION	200 MICRONS
DIFFERENTIAL PRESSURE	SEE DIFFERENTIAL PRESSURE DIAGRAM

**WATER QUALITY**  
THE WATER MUST BE OF DRINKABLE QUALITY. IF THE WATER IS OF LESSER QUALITY A FILTER WITH A MESH OF 200 MICRONS IS REQUIRED IN THE ON-SITE INLET.

**ANTIFREEZE**  
AN ANTIFREEZE AGENT MAY BE ADDED, BY THE TECHNICIAN WHO WILL START THE SYSTEM, TO THE ON-SITE CIRCUIT TO PROVIDE PROTECTION FOR TEMPERATURES TO -13°F WITH A MIXTURE OF 40% ANTIFREEZE. TO COMPENSATE FOR THE RESULTING REDUCTION IN COOLING CAPACITY, THE WATER FLOW RATE WILL HAVE TO BE INCREASED. WATER WITH ANTIFREEZE FROM THE ON-SITE CHILLED WATER MUST BE BETWEEN 39.2° F AND 57.2° F. ONLY WATER AT THIS TEMPERATURE MAY FLOW THROUGH THE WATER/WATER COOLING SYSTEM. ANTIFREEZE TO BE SUPPLIED BY THE CUSTOMER/CONTRACTOR. CHILLER MANUFACTURER'S SPECIFICATIONS MAY DIFFER, VERIFY WITH SIEMENS PROJECT MANAGER.

1) TO GUARANTEE THE LIMIT OF THE MAXIMUM WATER PRESSURE OF 145 PSI, THE ON-SITE COOLING WATER SYSTEM MUST PROVIDE A SUITABLE SAFETY DEVICE, EX. PRESSURE RELIEF VALVE.



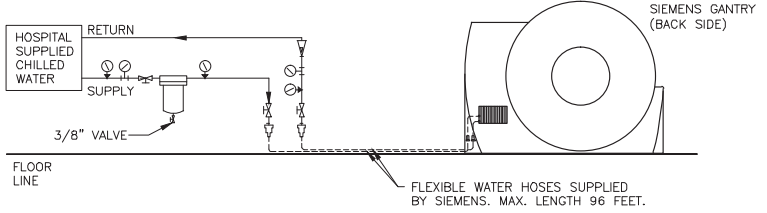
CHILLED WATER COOLING CIRCUIT

PIPING AND HOSE SCHEMATIC CLOSED LOOP CHILLED WATER

PIPING AND FIXTURES TO BE SPECIFIED BY THE MECHANICAL ENGINEER OF RECORD AND TO BE SUPPLIED AND INSTALLED BY THE MECHANICAL CONTRACTOR.

RECOMMENDED PIPE SIZE FOR TOTAL LENGTH OF PIPING LOOP IS USUALLY 1". THE MECHANICAL ENGINEER MUST DETERMINE THE ACTUAL PIPE SIZE REQUIRED FOR THE TOTAL LENGTH OF THE RUN. THE ON-SITE PIPES ARE TO BE INSULATED WITH 1/2" ARMAFLEX INSULATION BY THE CUSTOMER/CONTRACTOR. SIEMENS NON-INSULATED FLEXIBLE WATER HOSES ARE TO BE INSULATED WITH 1/2" ARMAFLEX INSULATION BY THE CUSTOMER/CONTRACTOR. INSULATED WATER HOSES ARE AVAILABLE THROUGH SIEMENS. THESE INSULATED HOSES ARE USABLE FOR ON-SITE WATER TEMPERATURE RANGES GREATER THAN OR EQUAL TO 46.4 °F TO 60.8 °F. ADDITIONAL INSULATION MUST BE SUPPLIED AND APPLIED TO THE HOSES BY THE CUSTOMER/CONTRACTOR FOR ON-SITE WATER TEMPERATURE RANGES 39.2° F TO <46.4° F. THIS MAY REQUIRE AN INCREASE IN THE CONDUIT/DUCT SIZE FOR HOSES.

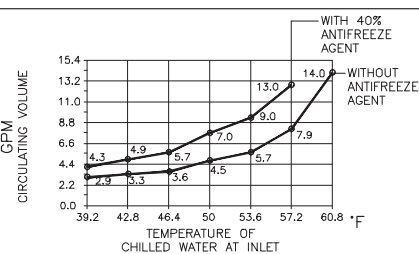
THE CHILLED WATER DELIVERY SYSTEM MUST BE INSTALLED AND CHARGED PRIOR TO EQUIPMENT DELIVERY.



ALL COMPONENTS SUPPLIED BY MECHANICAL CONTRACTOR AT A CONVENIENT HEIGHT FOR SERVICING. ALL ITEMS IN THE FIXTURE LEGENDS CAN BE ORDERED FROM PROCAM CONTROLS, (800) 333-2556 OR FAX (214) 422-6262

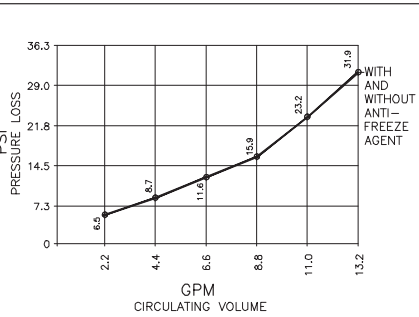
REQUIRED FIXTURE LEGEND	RECOMMENDED ADDITIONAL FIXTURE LEGEND
1" MALE NPT	VISUAL FLOW GAUGE F-451002LHN (2-20 GPM)
FILTER W/200 MICRON BAG OR EQUAL THAT MEETS SPECIFICATION.	BALL VALVE (BRONZE) B6080
	THERMOMETER (20"-120°F) TG-1, 530-30005
	PRESSURE GAUGE 530-2005 (LIQUID FILLED 0-160 PSI)

WATER FLOW RATE



THIS DIAGRAM ILLUSTRATES THE DEPENDENCY OF THE MINIMUM CIRCULATING VOLUME ON CHILLED WATER TEMPERATURE.

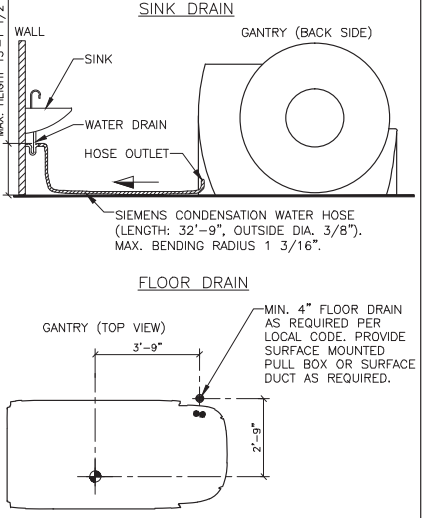
PRESSURE LOSS



THIS DIAGRAM ILLUSTRATES THE RELATIONSHIP BETWEEN THE CIRCULATING VOLUME AND THE PRESSURE LOSS IN THE COOLING UNIT WITHIN THE GANTRY.

A WATER DRAIN IS REQUIRED TO BE SUPPLIED AND INSTALLED BY THE CUSTOMER/CONTRACTOR TO DRAIN CONDENSED WATER FROM THE GANTRY. THE DRAIN MUST BE WITHIN 32'-9" OF THE GANTRY (TO USE THE DELIVERED WATER HOSE) AND CANNOT EXCEED 13'-1 1/2" ABOVE THE FINISHED FLOOR. THE DISTANCE FROM THE GANTRY TO THE DRAIN MAY BE EXTENDED UP TO 65'-7" WITH EXTENSION MATERIAL PROVIDED BY THE CUSTOMER/CONTRACTOR. BELOW ARE SOME EXAMPLES OF POSSIBLE WATER DRAINS. THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR DETERMINING WHICH DRAIN TYPE TO USE AND FOR SPECIFYING, SUPPLYING AND INSTALLING THE PLUMBING FIXTURES NECESSARY TO CONNECT THE SIEMENS WATER HOSE TO THE SELECTED DRAIN.

THE MAX. PUMP CAPACITY OF THE CONDENSED WATER IS 5.3 GALLONS/HR AT 75% RELATIVE HUMIDITY.



CONDENSATION WATER DRAIN

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FINISHED ROOM HEIGHT	
FOR CT GANTRY ONLY	MINIMUM 7'-6 9/16"
CAREVISION MONITOR/CEILING MOUNT	MIN. 9'-2 5/8" MAX. 11'-2 5/8"

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SCALE: AS NOTED		DATE: 08/12/14	
REF: #1-91J713		SHEET: <b>M-101</b>	

FORCE REV 0



View Looking Towards Door



View Looking Towards Equipment Closet





View Looking Towards Control Room



Rooftop Chiller Unit



## EXHIBIT D

September 19, 2014

Mr. Thomas Chidley  
The KPA Group  
One Kaiser Plaza, Suite 445  
Oakland, CA 94612

Re: Evaluation of the ME2 Automatic Transfer Switch in Bldg. 100 for Providing Electrical Service to the CT scanner at VA Palo Alto Campus. KPA job number 552.05.

Dear Mr. Chidley:

During our site visit to VA Palo Alto, Building 100 on Tuesday, September 16, 2014 at 10:00 AM, we looked at switchgear ME2 and the existing 480-volt, 600-amp rated Automatic Transfer Switch (ATS) and Distribution Panel to determine if the new CT scanner can be connected to this power source.

Based on calculations performed by the design engineer, connecting the new CT scanner to the ME2 switchgear ATS will result in exceeding the rated capacity (600-amp) of the ATS.

Option A - would be to replace the existing 600-amp ATS with a new 800-amp ATS. However the dimension of the 800-amp ATS is about 4-inches wider than the 600-amp ATS and therefore will not fit in the available space vacated by the existing 600-amp ATS. There are panels on both sides of the 600-amp ATS. This option is not feasible.

Option B - would be to leave the existing 600-amp APS as is and install a new 800-amp ATS and distribution panel in the open space on the right side of the ME2 switchgear line up. The new 800-amp ATS can then provide power to the new CT scanner and future loads provided the upstream normal and emergency systems have the capacity to support this additional equipment and load(s).

We suggest that the an in-depth study be performed to evaluate the capacity and loading of the normal and emergency power systems (transformers, generators, feeders, loads, etc.) to confirm that the normal and emergency systems have adequate capacity to serve the proposed additional load(s).

Sincerely,

GHD Inc.

A handwritten signature in black ink, appearing to read "Shishir M. Doctor", with a stylized flourish at the end.

Shishir M. Doctor P.E., LEED AP