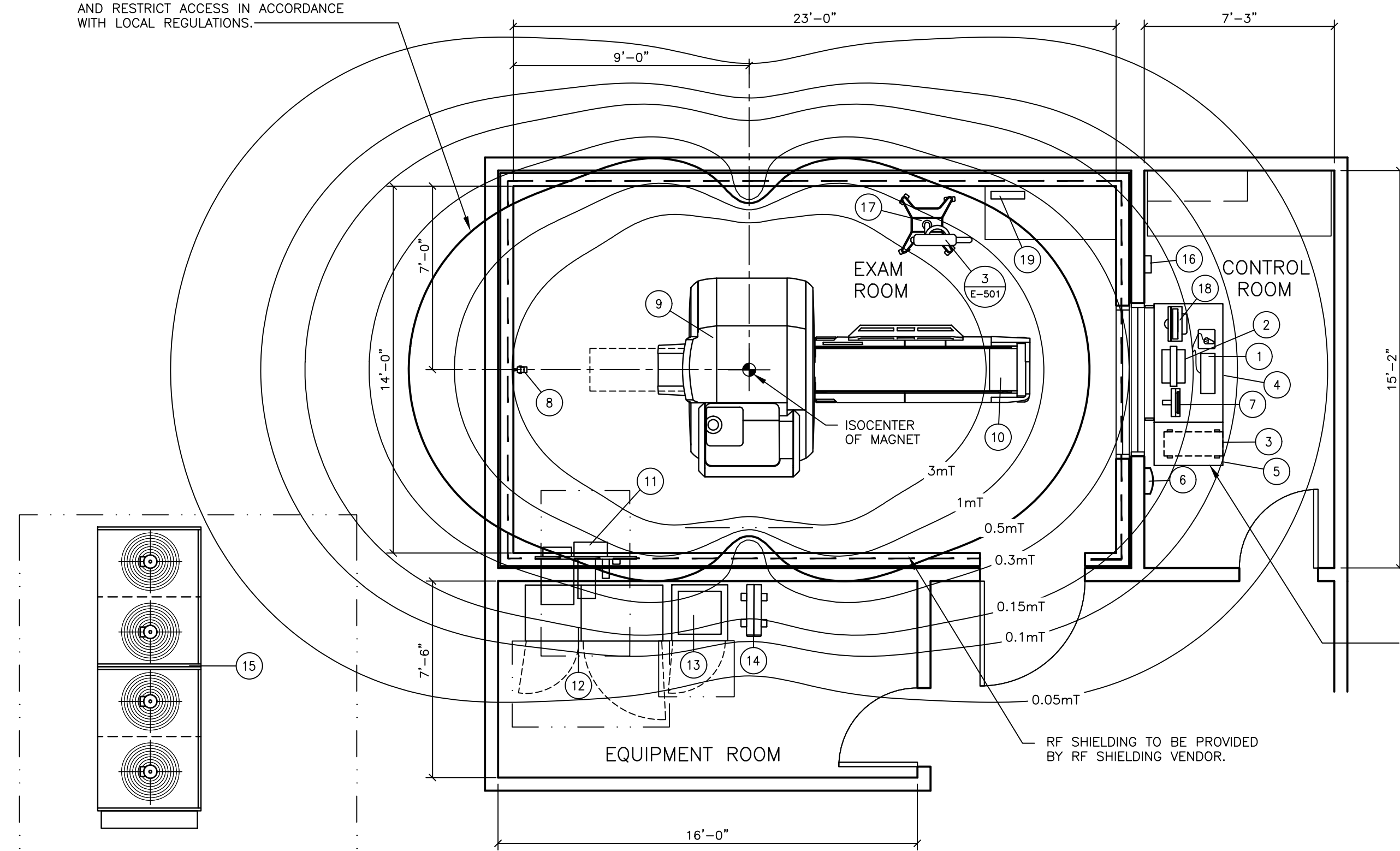


THE 0.5mT FIELD SHOULD BE RESTRICTED FROM INDIVIDUALS WITH PACEMAKERS AND INSULIN PUMPS. IT IS NECESSARY TO DISPLAY WARNING SIGNS AND RESTRICT ACCESS IN ACCORDANCE WITH LOCAL REGULATIONS.



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

CHILLER MAY OPTIONALLY BE SUPPLIED BY SIEMENS, LOCATED AND INSTALLED BY CUSTOMER/CONTRACTOR. REFER TO MANUFACTURER'S INFORMATION.

IF A CLOSET IS DESIRED TO CONCEAL THE FILTER PLATE AND CABLE CONNECTIONS, IT IS TO BE DESIGNED AND SPECIFIED AND PROVIDED BY THE CUSTOMER OR THEIR REPRESENTATIVE. A 30 1/4" CLEARANCE IS REQUIRED FOR SERVICE AND CABLING.

THERE SHALL BE A SEPARATE RF ROOM PENETRATION PANEL FOR NON-SIEMENS EQUIPMENT. THE OUTSIDE EQUIPMENT MANUFACTURER (OEM) WILL SPECIFY ANY AND ALL FILTER AND PENETRATION PANEL REQUIREMENTS.

ARCHITECTURAL EQUIPMENT PLAN

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

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

MAGNETIC FIELD WARNING
PLEASE BE AWARE THAT DURING THE CALIBRATION PHASE OF THE MRI INSTALLATION, THE MAGNET WILL BE AT FULL FIELD STRENGTH AND ALL NECESSARY PRECAUTIONS WHEN WORKING IN THE VICINITY OF STRONG MAGNETIC FIELDS MUST BE TAKEN. WHEN THE CALIBRATION OF THE MAGNET OVERLAPS WITH FINAL CONSTRUCTION ACTIVITIES, THERE IS THE POSSIBILITY OF THE INTRODUCTION OF FERROUS MAGNETIC OBJECTS BY WORKERS INTO THE MR ROOM. IT IS THE RESPONSIBILITY OF THE CUSTOMER TO ENSURE THAT ALL PRECAUTIONS ARE TAKEN TO ENSURE THAT THIS DOES NOT HAPPEN, AS EQUIPMENT DAMAGE AND SERIOUS BODILY INJURY COULD OCCUR.
REV 0

EXAM ROOM LIGHTING
THE MAGNETIC FIELD ADVERSELY AFFECTS THE OPERATING LIFE OF LIGHT BULBS LOCATED IN THE IMMEDIATE VICINITY OF THE MAGNET. THE FILAMENT IN THE BULBS OSCILLATES WITH THE FREQUENCY OF THE POWER SUPPLY. LIGHTS IN THE VICINITY OF THE MAGNET CONNECTED TO A DC POWER SUPPLY CAN REDUCE THIS EFFECT. RESIDUAL DC RIPPLE SHOULD BE LESS THAN 5%.
REV 2

MAGNET CO-SITING
MINIMUM DISTANCE MAGNET-MAGNET (SIEMENS)

	0.2T	0.35T	1.0T	1.5T	3.0T
0.2T	32'-9"	32'-9"	16'-5"	19'-9"	32'-9"
0.35T	32'-9"	32'-9"	16'-5"	19'-9"	32'-9"
1.0T	16'-5"	16'-5"	14'-10"	16'-5"	19'-9"
1.5T	19'-9"	19'-9"	16'-5"	16'-5"	19'-9"
3.0T	32'-9"	32'-9"	19'-9"	19'-9"	19'-9"

DO NOT RAMP ONE MAGNET WHILE THE OTHER IS RUNNING APPLICATIONS. SHIM IS ONLY OPTIMIZED WHEN BOTH MAGNETS ARE RAMPED UP DURING THE SHIMMING PROCEDURE.
WHEN CO-SITING AN MR SYSTEM WITH A MAGNETIC NAVIGATION SYSTEM THE MINIMUM DISTANCE FOR CLINICAL IMAGING IS 98'-6". FOR SPECTROSCOPY THE MINIMUM SEPARATION IS 121'-5".
REV 0

OEM ACCESSORY ITEMS
FOR OEM (OUTSIDE EQUIPMENT MANUFACTURER) ITEMS THAT ARE SOLD AS ACCESSORIES TO THE SIEMENS MR SYSTEM (INJECTORS, LASER LIGHTS, ELASTOGRAPHY, CHILLERS, UPS, ETC.), PLEASE REFER TO THE SIEMENS PROJECT MANAGER AND THE ACTUAL EQUIPMENT VENDOR.
REV 0

EQUIPMENT LEGEND

NO	DESCRIPTION	SMS SYM	WEIGHT (LBS)	BTU/HR TO AIR	DIMENSIONS (INCHES)			REMARKS	
					W	D	H		
1	MRC KEYBOARD	[Symbol]	5	---	27 1/4	10 1/8	1 3/4	ON CONSOLE/COUNTER	
2	COLOR MONITOR FOR MRC	[Symbol]	22	239	18 5/16	16 15/16	4 3/4	ON CONSOLE/COUNTER	
3	HOST PC MRC	[Symbol]	49	2,389	11	27	18 1/8		
4	MRC OPERATING CONSOLE TABLE (OPTION)	[Symbol]	132	---	54 3/8	31 1/2	27-46	ADJUSTABLE HEIGHT	
5	CONTAINER FOR HOST PC 500 (OPTION)	[Symbol]	238	---	19 5/8	31 1/2	28 3/8		
6	ALARM BOX	[Symbol]	2	---	9	4	9		
7	PATIENT MONITOR (OPTION)	[Symbol]	30	---	13	8	12 1/2		
8	PATIENT SUPERVISION CAMERA (OPTION)	[Symbol]	3	---	3 1/8	6 3/4	6 3/4	WALL MOUNTED	
9	AERA MAGNET WITH COVERS, COILS, ELECTRONICS	[Symbol]	10,093	7,506	91	170	86		
10	PATIENT TABLE (MOBILE)	[Symbol]	529	---	29 1/2	97 1/4	21-41		
11	RF-FILTER PLATE	[Symbol]	287	853	46 1/2	35 1/8	21 5/8		
12	ELECTRONICS CABINET (GPA/EPC CABINET)	[Symbol]	3,307	<3,412	61 1/2	26	77 1/2		
13	SEP CABINET	[Symbol]	750	<3,412	25 5/8	25 5/8	73 5/8		
14	LIEBERT GXT4 UPS WITH BATTERY (OPTION)	[Symbol]	164	1,121	17	23 5/8	6 3/4		
15	DIMPLEX CHILLER (45kW) (OPTION)	[Symbol]	4,000	---	138	44	84 1/2	CUST. TO LOCATE/INSTALL	
16	DIMPLEX STATUS PANEL (OPTION)	[Symbol]	---	---	3	6 1/8	1 1/2	3 1/4	WALL MOUNTED IN CONTROL ROOM
17	MRXPERION INJECTOR STAND AND HEAD (OPTION)	[Symbol]	94	---	23 3/8	28 3/8	71 7/8	INJECTOR ON STAND	
18	MRXPERION ICBC INJECTOR CRU (OPTION)	[Symbol]	17.6	---	15 3/4	10 1/4	13 1/2	ON CUSTOMERS COUNTER	
19	MRXPERION ICBC INJECTOR POWER SUPPLY (OPTION)	[Symbol]	6	---	15 3/8	3 3/8	15 1/2	LOCATED IN EXAM ROOM OUTSIDE 5mT FIELD	

PROTECTING THE MAGNETIC FIELD
THE SIEMENS MR SYSTEM UTILIZES A SUPERCONDUCTIVE MAGNET WITH AN EXTREMELY HOMOGENEOUS FIELD WITHIN THE MAGNET TO PROVIDE DISTORTION FREE IMAGING. THE PRESENCE OF FERROMAGNETIC MATERIAL WITHIN THE VICINITY OF THE MAGNET CAN ADVERSELY AFFECT THE UNIFORMITY OF THE USEFUL MAGNETIC FIELD. THIS APPLIES TO STATIONARY FERROUS MATERIAL (STRUCTURAL STEEL) WHICH IS TO BE MINIMIZED. STATIONARY STEEL COMPENSATION MAY BE ACHIEVED BY MAGNET POSITIONING AND SELECTIVE USE OF SHIMS. DISTORTION CAUSED BY MOVING FERROMAGNETIC OBJECTS (MOTOR VEHICLES, ELEVATORS) IS MORE DIFFICULT TO COMPENSATE AND MAY REQUIRE THE USE OF MAGNETIC SHIELDING.
REV 0

PROTECTING THE ENVIRONMENT
PROTECTING THE IMMEDIATE ENVIRONMENT FROM THE EFFECT OF THE MAGNETIC FIELD REQUIRES CONSIDERATION. INFORMATION STORED ON MAGNETIC DATA CARRIERS SUCH AS DISCS, TAPES AND CARDS MAY BE ERASED IF NEAR THE MAGNET. CAUTION WITH REGARD TO HEART PACEMAKERS MUST BE EXERCISED. MOST PACEMAKER UNITS EMPLOY A REED RELAY WHICH MAY CHANGE OPERATING MODE WHEN EXPOSED TO AN EXTERNAL MAGNETIC FIELD. PACEMAKER USERS MUST BE KEPT AT A SPECIFIED DISTANCE FROM THE MAGNET WHICH IS DETERMINED BY THE MAGNET FIELD STRENGTH.
REV 0

MAGNET SITING REQUIREMENTS
IT MUST BE ENSURED THAT THE MAGNET IS LOCATED SO THAT THE STABILITY AND HOMOGENEITY OF THE MAGNETIC FIELD ARE NOT ADVERSELY AFFECTED BY EXTRANEOUS FIELDS AND STATIC OR DYNAMIC FERROMAGNETIC OBJECTS.

X & Y AXES	Z AXIS	SOURCE OF INTERFERENCE
4'-2"		FLOOR STEEL REINFORCEMENT <20 LBS./FT ² IRON BEAMS < 66 LBS./FT.
16'-1"	19'-1"	MOVING METAL UP TO 110 LBS.
13'-1"		WATER COOLING UNIT (CHILLER)
17'-5"	21'-4"	MOVING METAL UP TO 440 LBS.
18'-5"	24'-8"	MOVING METAL UP TO 2,000 LBS.
20'-5"	29'-7"	ELEVATORS, TRUCKS UP TO 10,000 LBS.
39'-5"	26'-2"	AC TRANSFORMERS LESS THAN 100 KVA
39'-5"	29'-7"	AC TRANSFORMERS LESS THAN 250 KVA
42'-7"	32'-10"	AC TRANSFORMERS LESS THAN 650 KVA
45'-11"	36'-2"	AC TRANSFORMERS LESS THAN 1600 KVA
9'-10"	6'-6"	AC CABLES, MOTORS LESS THAN 100 AMPS
19'-9"	6'-7"	AC CABLES, MOTORS LESS THAN 250 AMPS
29'-7"	36'-2"	AC CABLES, MOTORS LESS THAN 1000 AMPS

FOR IRON OBJECTS LOCATED UP TO 45' FROM THE Z AXIS, THE DISTANCES FOR THE Z AXIS MUST BE USED. REDUCTION IS POSSIBLE WITH STEEL SHIELDING.

MAGNETIC FRINGE FIELDS
MAGNETIC FIELDS MAY AFFECT THE FUNCTION OF DEVICES IN THE VICINITY OF THE MAGNET. THESE DEVICES MUST BE OUTSIDE CERTAIN MAGNETIC FIELDS. THE DISTANCES LISTED ARE FROM THE MAGNET ISOCENTER AND DO NOT CONSIDER ANY MAGNETIC ROOM SHIELDING.

FIELD	X & Y	Z AXIS	DEVICES
3.0mT	6'-1"	9'-2"	SMALL MOTORS, WATCHES, CAMERAS, CREDIT CARDS, MAGNETIC DATA CARRIERS.
1.0mT	7'-3"	11'-6"	COMPUTERS, MAGNETIC DISK DRIVES, OSCILLOSCOPES, PROCESSORS
0.5mT	8'-3"	13'-2"	CARDIAC PACEMAKERS, X-RAY TUBES, INSULIN PUMPS, B/W MONITORS, MAGNETIC DATA CARRIERS (LONG-TERM STORAGE)
0.2mT	9'-9"	16'-1"	SIEMENS CT SCANNERS
0.15mT	10'-4"	17'-1"	CRT MONITORS, SIEMENS LINEAR ACCELERATORS
0.05mT	13'-1"	22'-3"	X-RAY IMAGE INTENSIFIERS, GAMMA CAMERAS, PET/CYCLOTRON, ELECTRON MICROSCOPES, LINEAR ACCELERATORS

THE OWNER/USER IS TO VERIFY THE LOCATION OF THE 0.5mT FIELD AND ENSURE THAT IT IS MAINTAINED AS A RESTRICTED AREA.

PROJECT MILESTONES

PROJECT MILESTONES TO BE COMPLETED BEFORE EQUIPMENT DELIVERY	REFERENCE SHEET
<input type="checkbox"/> DELIVERY PATH VERIFIED, COORDINATED DELIVERY PATH CLOSE UP PRIOR TO CALIBRATION	A-102
<input type="checkbox"/> COORDINATE RF ROOM CONSTRUCTION/ROOM FINISH PRIOR TO CALIBRATION	A-102
<input type="checkbox"/> FLOOR LEVEL MEETS SIEMENS SPECIFICATIONS AND ALL BASEPLATES INSTALLED	S-101
<input type="checkbox"/> RF ROOM TEST COMPLETED AND MEETS SIEMENS SPECIFICATIONS	A-502
<input type="checkbox"/> ALL RACEWAY, CONDUITS AND JUNCTION BOXES INSTALLED	E-101
<input type="checkbox"/> ALL PLUMBING INSTALLED AND TESTED	M-101
<input type="checkbox"/> POWER DISTRIBUTION COMPLETED PER SYSTEM REQUIREMENTS	E-102
<input type="checkbox"/> ALL EPO BUTTONS INSTALLED AND TESTED	E-101
<input type="checkbox"/> MR COMPATIBLE LIGHTING AND CEILING GRIDS INSTALLED IN MAGNET ROOM	A-101
<input type="checkbox"/> CONTROL ROOM COMPLETED ENOUGH TO FACILITATE THE INSTALLATION	A-101
<input type="checkbox"/> CHILLED WATER SUPPLY AVAILABLE AND MEETS SIEMENS SPECIFICATIONS	M-101
<input type="checkbox"/> HVAC SYSTEM COMPLETE, TESTED AND WORKING PER SIEMENS SPECIFICATIONS	M-101
<input type="checkbox"/> QUENCH PIPE CONSTRUCTED AND INSTALLED PER SIEMENS SPECIFICATIONS	M-501
<input type="checkbox"/> ETHERNET CONNECTION INSTALLED AND IN OPERATION AT THE SHOWN LOCATIONS	E-101

CEILING HEIGHTS
EXAM ROOM 7'-11" MINIMUM
CONTROL ROOM 6'-11" MINIMUM
EQUIPMENT ROOM 7'-3" MINIMUM

ARCHITECTURAL NOTES

- 1) 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 ENDOCHORE WITHIN DESIGNATED SAFETY AND SERVICE CLEARANCE ZONES AS INDICATED ON DRAWINGS (IE: 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.
- 2) 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 COMPLETE 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.
- 3) THE CUSTOMER IS RESPONSIBLE FOR ALL ROOM AND AREA PREPARATION COSTS, PROFESSIONAL FEES, PERMITS, REPORTS, AND INSPECTION FEES.
- 4) 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.
- 5) ALL DIMENSIONS SHOWN ARE TAKEN FROM FINISHED SURFACES UNLESS SPECIFIED OTHERWISE.
- 6) 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.
- 7) SMS SHALL BE RESPONSIBLE FOR SMS EQUIPMENT INSTALLATION AND CALIBRATION, CONNECTION AND INSTALLATION OF SMS PROVIDED CABLES. THE CUSTOMER/ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR TERMINATIONS OF CUSTOMER/ELECTRICAL CONTRACTOR-SUPPLIED CABLES 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.
- 8) 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 (IE: O.R. LIGHTS, MEDICAL GAS COLUMNS, PHYSIOLOGICAL MONITORING INJECTORS, ORT PLATFORMS, SPRINKLER HEADS, SMOKE DETECTORS, ELECTRICAL OUTLETS, HVAC GRILLES, SPEAKERS, AND GENERAL ROOM LIGHTING, ETC.).
- 9) 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.

CONSTRUCTION REQUIREMENTS
THE CUSTOMER/CONTRACTOR IS RESPONSIBLE FOR SUPPLYING AND INSTALLING ALL CONSTRUCTION MATERIALS INCLUDING ELECTRICAL AND MECHANICAL DEVICES REQUIRED BY SIEMENS SPECIFICATIONS AND TO ENSURE THAT THE MATERIAL USED INSIDE THE RF-SHIELDING IS AS FREE OF FERROMAGNETIC PROPERTIES AS POSSIBLE. STEEL WALL STUDS ARE PERMITTED BUT MUST BE SECURED PROPERLY. ANY FERROUS MATERIAL INSIDE THE EXAM ROOM MAY BECOME A MISSILE AND CAUSE INJURY TO PEOPLE AND DAMAGE TO EQUIPMENT. FERROUS ITEMS INSIDE THE EXAM ROOM ARE THE LIABILITY OF THE CONTRACTOR AND/OR INSTALLER.
REV 2

CASEWORK & ACCESSORY NOTES

- 1) 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.
- 2) ALL FURNITURE (CHAIRS, ETC.) FOR THE CONTROL ROOM ARE TO BE PROVIDED BY THE CUSTOMER.
REV 0

RESOURCE LIST (SMS USE ONLY)

DESIGNATION	PG NUMBER	DATE
PLANNING GUIDE	M7-010.891.01.13.02	09.17

ATTENTION:

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

- IT IS RECOMMENDED THAT THE SIEMENS DRAWINGS BE INCORPORATED WITH THE CONSTRUCTION DOCUMENTS FOR REFERENCE.

- 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.

SYM	DATE	DESCRIPTION
[Symbol]	N.A.	TYPICAL REV 1
[Symbol]		
[Symbol]		
[Symbol]		

-ISSUE BLOCK-

SIEMENS
MAGNETOM AERA
XQ GRADIENTS
TYPICAL FINAL DRAWING SET

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.

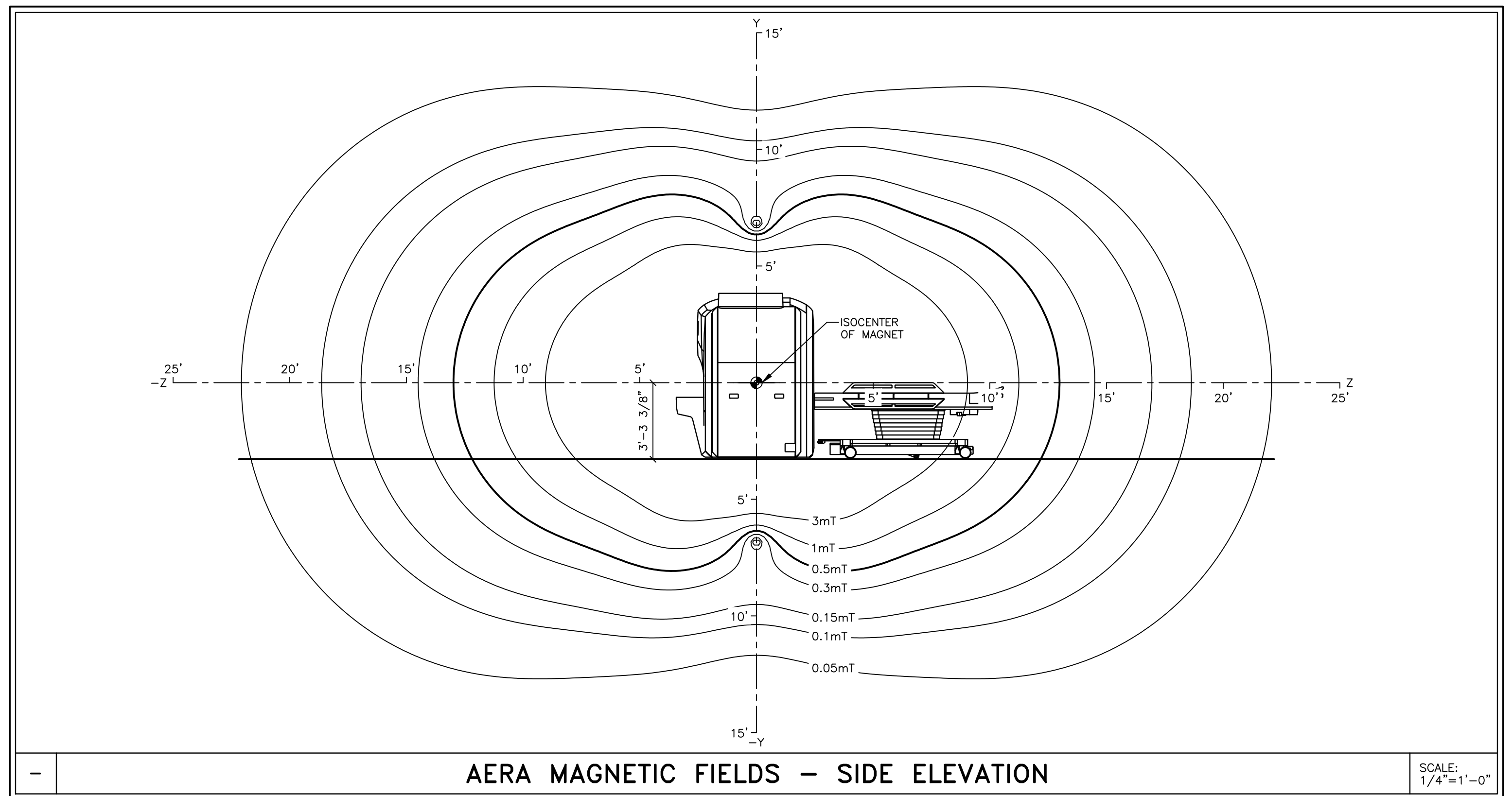
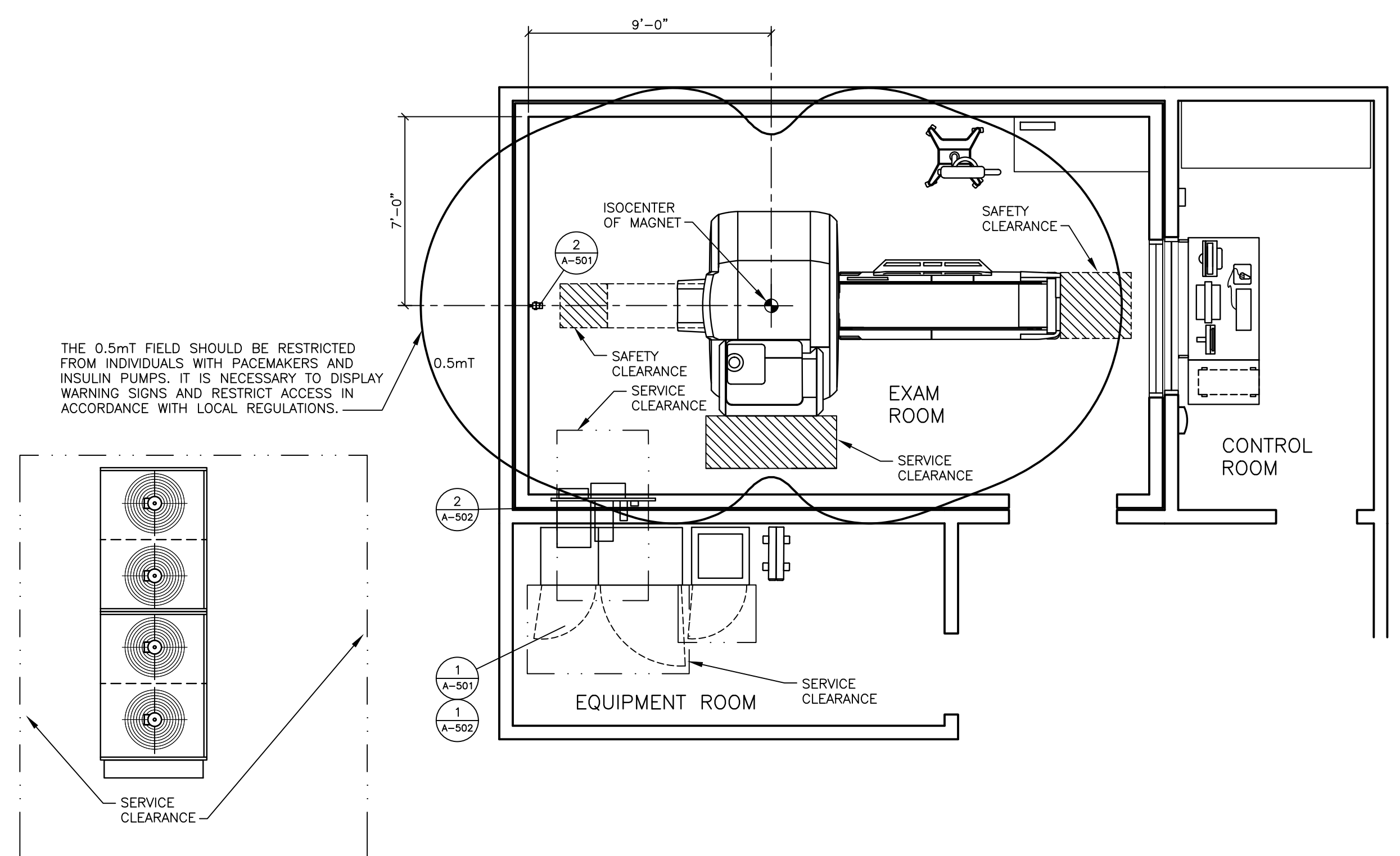
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SHEET: **A-101**

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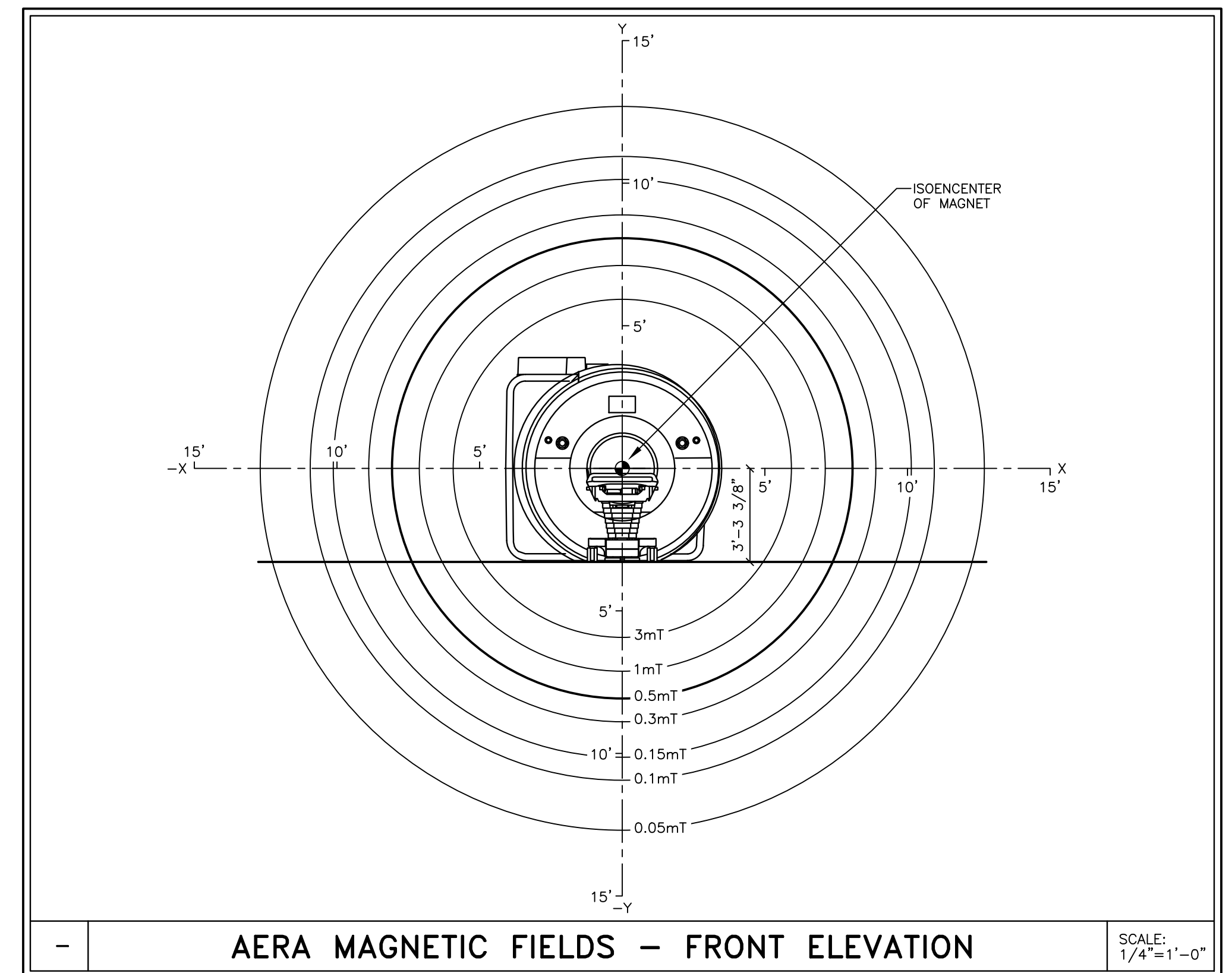
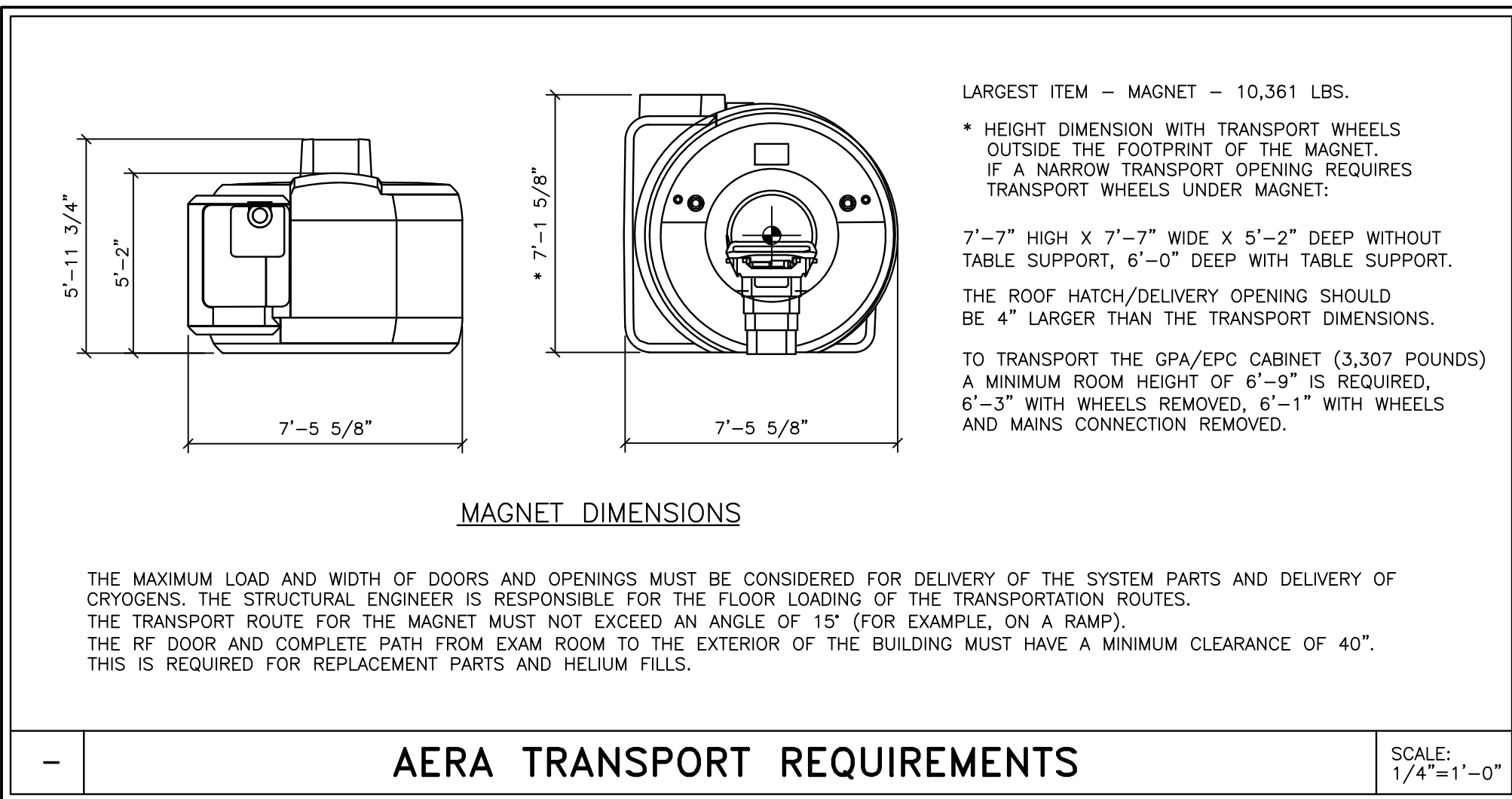
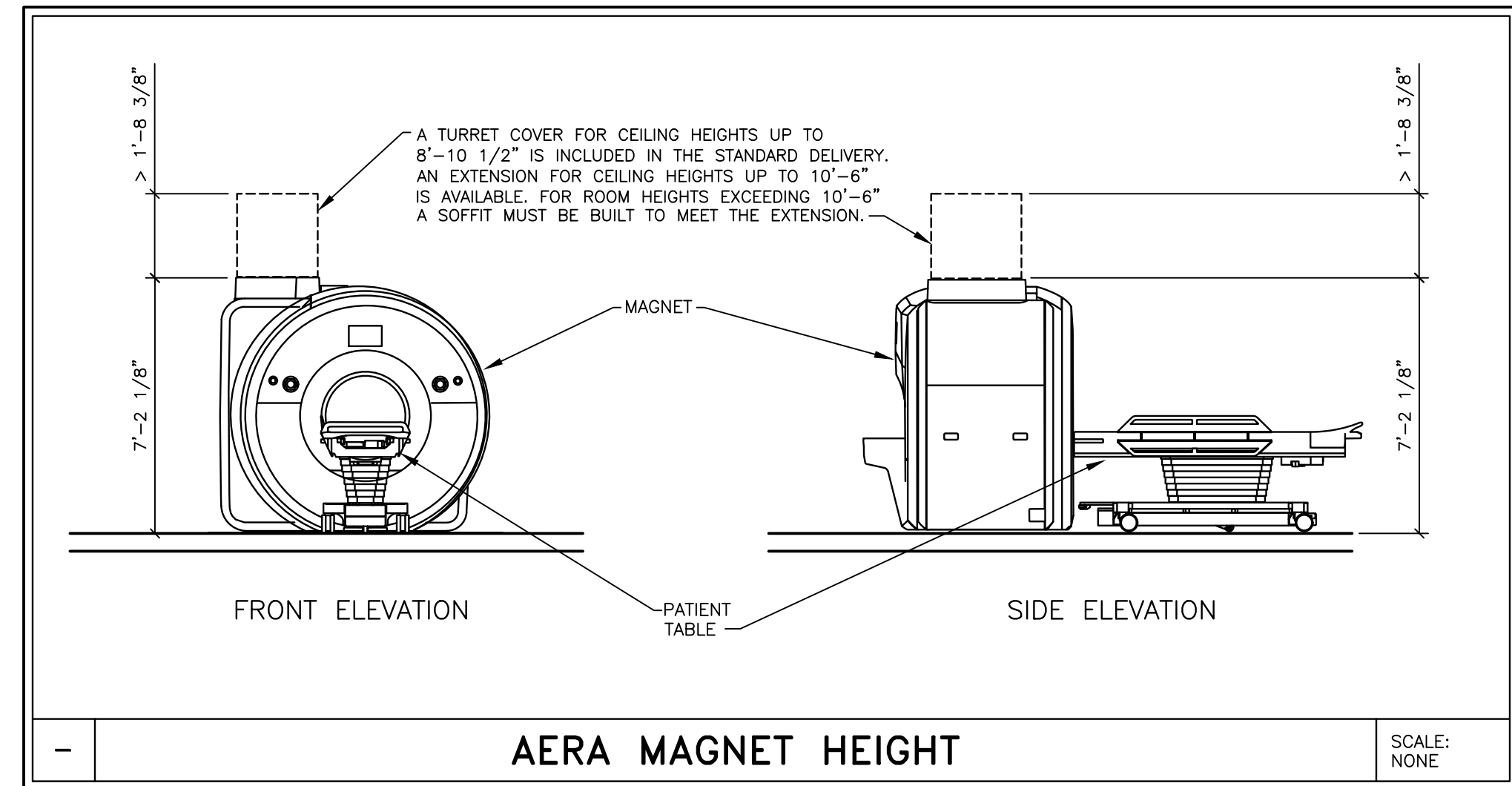
SHEET 1 OF 10 DRAWN BY: B. HERRMANN

REFERENCE DOCUMENT - NOT FOR CONSTRUCTION



SAFETY/SERVICE CLEARANCE PLAN

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



CEILING HEIGHTS

EXAM ROOM 7'-11" MINIMUM

CONTROL ROOM 6'-11" MINIMUM

EQUIPMENT ROOM 7'-3" MINIMUM

AERA REV 30

SIEMENS

MAGNETOM AERA

XQ GRADIENTS
TYPICAL FINAL DRAWING SET

PROJECT #: **17058**

SHEET: **A-102**

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

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SCALE: AS NOTED REF. #: --- DATE: N.A.

SHEET 2 OF 10 DRAWN BY: B. HERRMANN

SYM	DATE	DESCRIPTION
△	N.A.	TYPICAL REV 1

-ISSUE BLOCK-

ATTENTION:

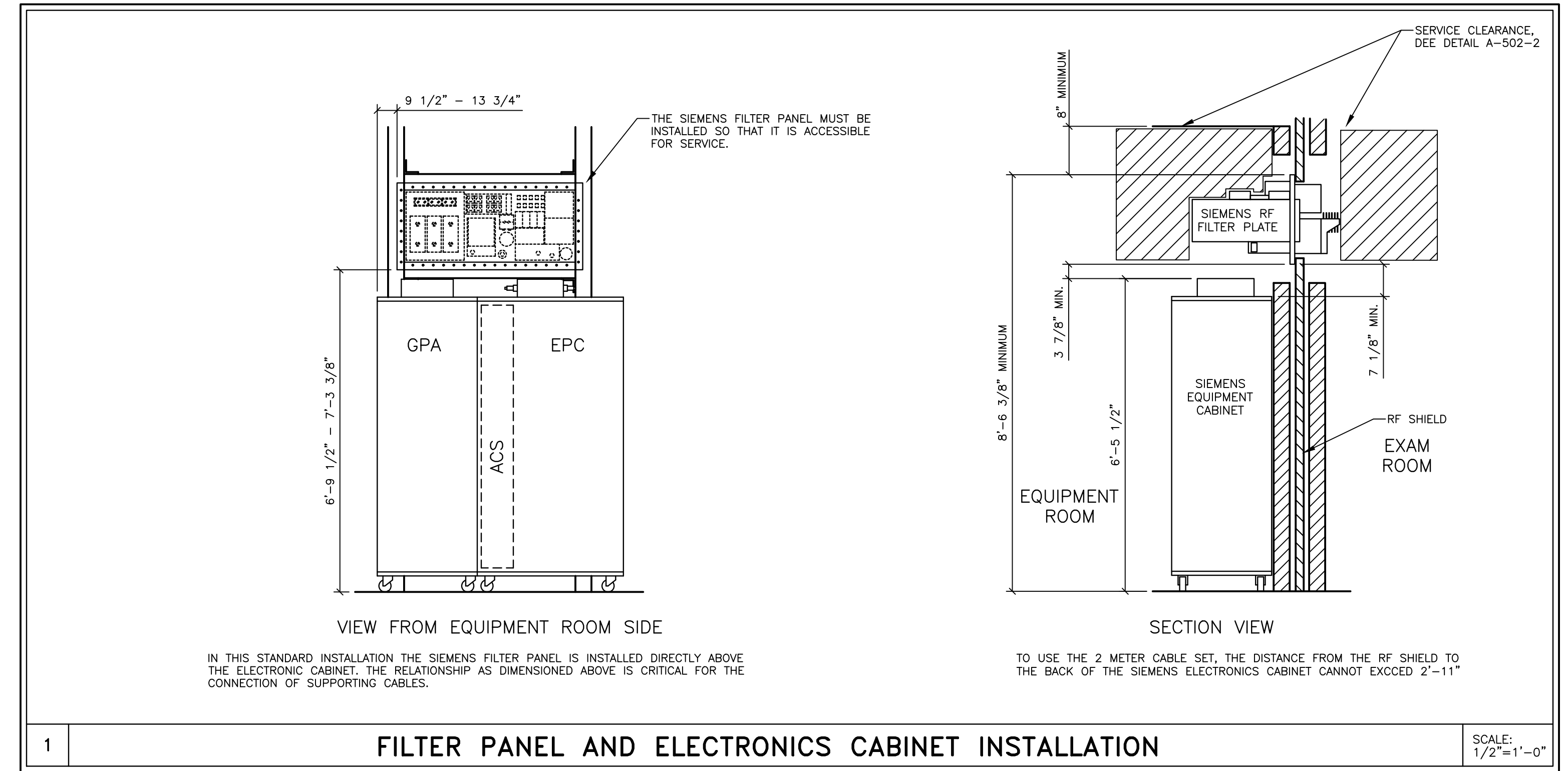
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1 **FILTER PANEL AND ELECTRONICS CABINET INSTALLATION** SCALE: 1/2"=1'-0"

SURFACE COIL STORAGE

SURFACE COILS ARE COMPONENTS OF THE MRI SYSTEM THAT ARE ATTACHED TO THE PATIENT TABLE DURING EXAMS. WHEN NOT IN USE COILS SHOULD BE STORED SO THAT THEY ARE FREE FROM DAMAGE. THE DESIGN OF THE MR EXAM ROOM MUST HAVE AMPLE STORAGE SPACE TO ACCOMMODATE ANY COILS THAT THE OWNER WILL HAVE. COILS MAY BE SELECTED FROM THE LIST BELOW. STORAGE PROVIDED BY CUSTOMER/CONTRACTOR.

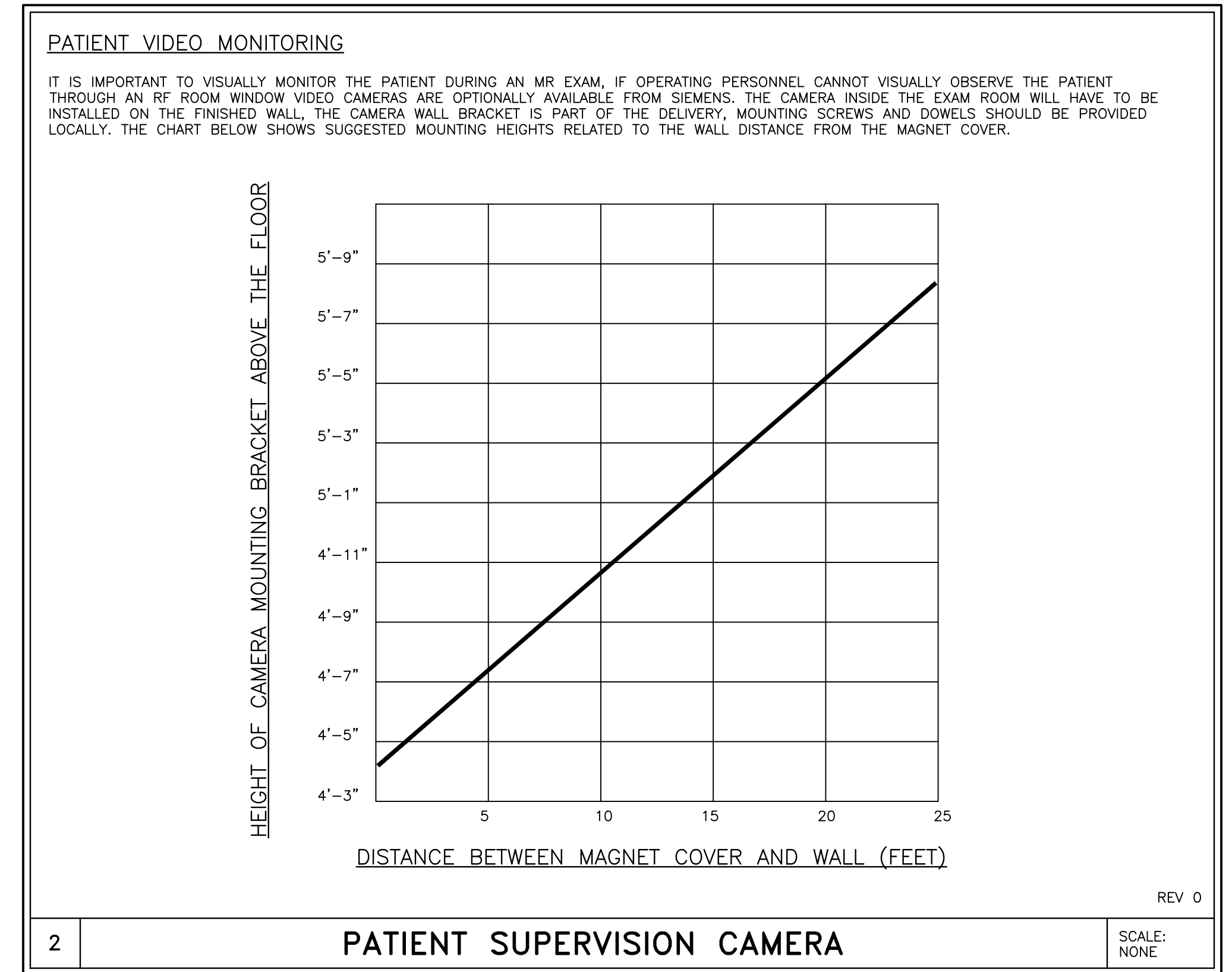
COIL NAME	POUND WEIGHT	INCHES		
		LENGTH	WIDTH	HEIGHT
BODY COIL 18	4	15 1/8	23 1/4	3
HEAD/NECK COIL 20	11	17 3/8	13	14 5/8
SPINE COIL 32	24	47 1/4	19 1/4	3
FLEX COIL LARGE 4	1.2	20 3/8	8 7/8	-
FLEX COIL SMALL 4	1	14 3/8	6 7/8	-
PERIPHERAL ANGIO 36	18	33 7/8	26	11
HAND/WRIST COIL 16	6	13 1/8	8 1/2	4 1/2
HAND/WRIST COIL BASE	4	20 5/8	12 3/8	1 1/4
FOOT/ANKLE COIL 16	7	16 1/8	13	15 3/8
FOOT/ANKLE COIL BASE	15	16 3/4	13 1/8	15 1/8
SHOULDER COIL LARGE 16	15	15	17	19
SHOULDER COIL SMALL 16	15	12	17	19
CP EXTREMITY	15	16	10 5/8	11 3/8
TX.RX 15 CHANNEL KNEE	15	10 1/8	14 1/8	12 1/4
BI BREAST COIL 4 CH.	23	34 5/8	18 1/2	8 1/4
AI BREAST COIL 16 CH.	24	28	18 1/2	7 7/8
SENTINELLE VANGUARD IMMOBILIZER	45	43 1/4	22 7/8	11

NOISE LEVELS

SYSTEM ROOM	NOISE LEVEL / dB(A)
CONTROL ROOM	<55
EXAMINATION ROOM	XQ GRADIENTS 86.1 OVER 8 HOUR AVERAGE 108.2 MAXIMUM MEASURED IN THE EXAM ROOM
EQUIPMENT ROOM	<65

NOISE LEVELS ARE BASED ON AN AVERAGE MEASUREMENT OVER 8 HOURS OF CLINICAL SCANNING. PEAK LEVELS MAY BE HIGHER FOR CERTAIN SEQUENCES.

IT IS THE CUSTOMER'S RESPONSIBILITY TO ENSURE THAT ALL LOCAL/ STATE/OSHA NOISE REGULATIONS ARE ADHERED TO. ADDITIONAL NOISE DATA MAY BE PROVIDED BY SIEMENS PROJECT MANAGER UPON REQUEST.



2 **PATIENT SUPERVISION CAMERA** SCALE: NONE REV 0

ATTENTION:

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

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SIEMENS		MAGNETOM AERA	
XQ GRADIENTS TYPICAL FINAL DRAWING SET			
THE USE OR REPRODUCTION OF THIS TITLE BLOCK WITHOUT SIEMENS AUTHORIZATION WILL RESULT IN PROSECUTION UNDER FULL EXTENT OF THE LAW.		PROJECT #: 17058	SHEET: A-501
ALL RIGHTS ARE RESERVED.		SHEET 3 OF 10	DRAWN BY: B. HERRMANN
- ISSUE BLOCK -		SCALE: AS NOTED	REF. #: ---

AERA
REV 30

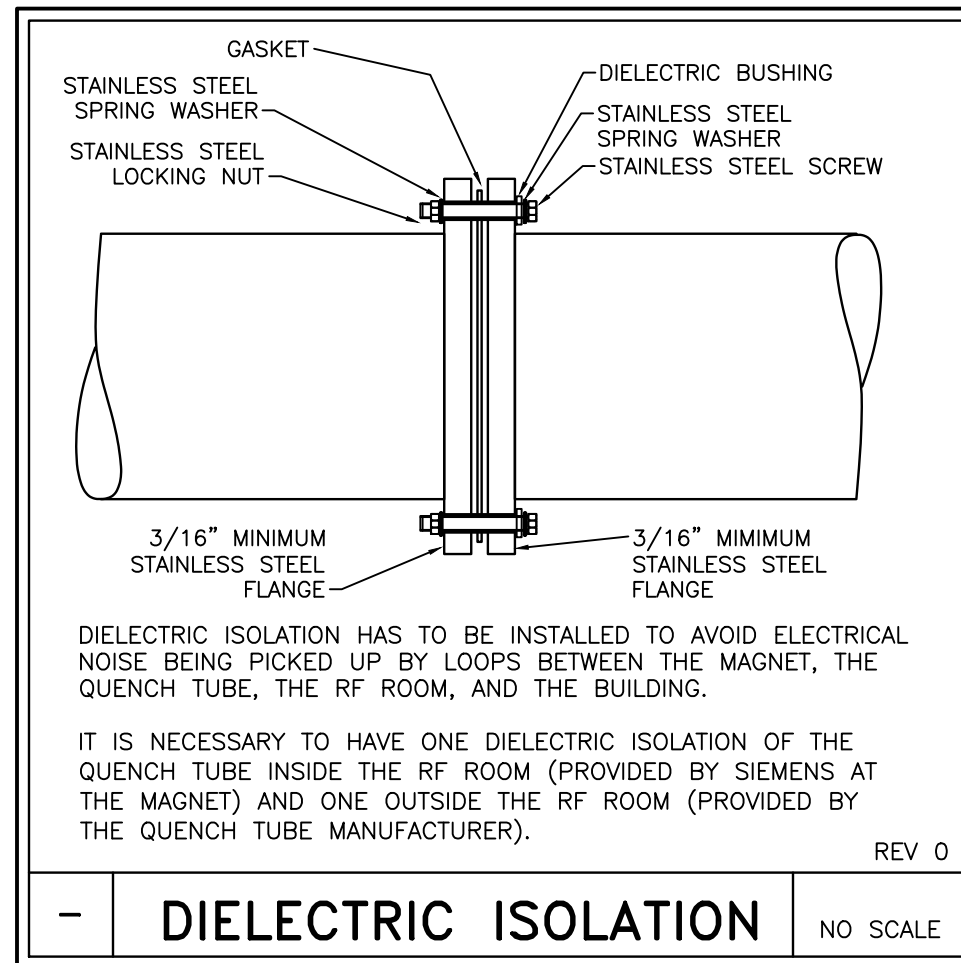
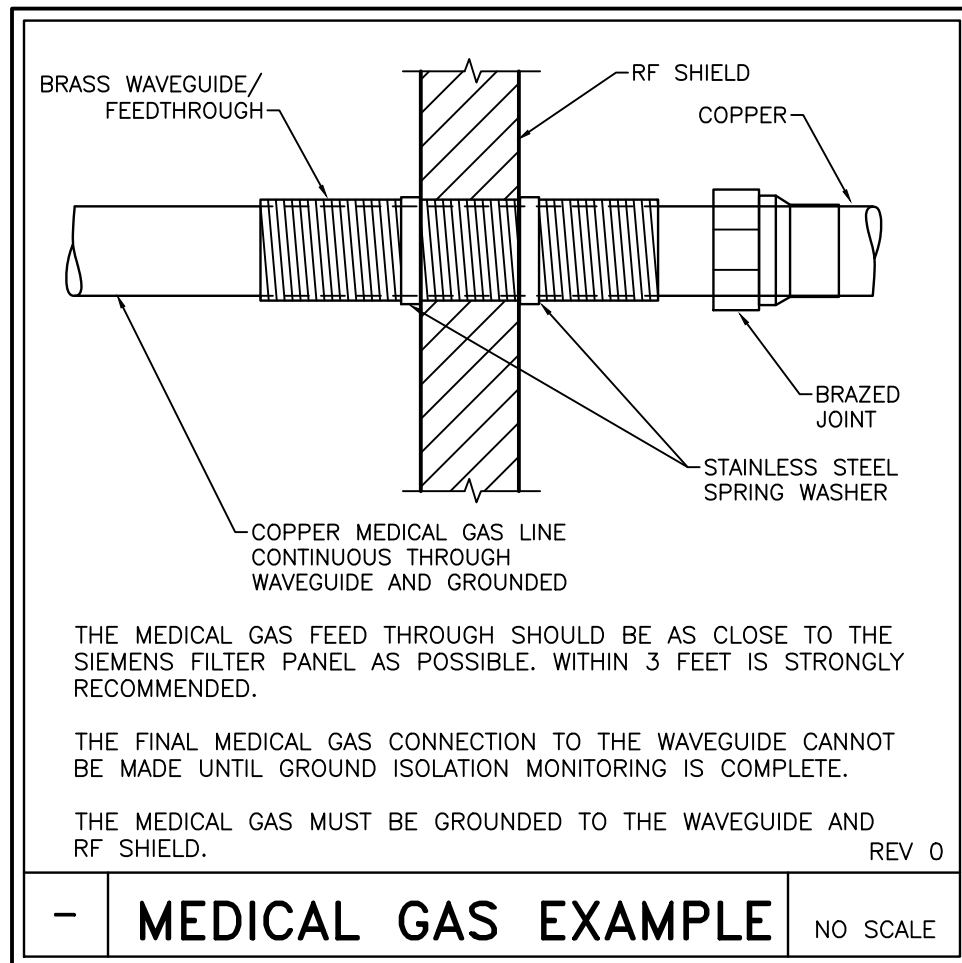
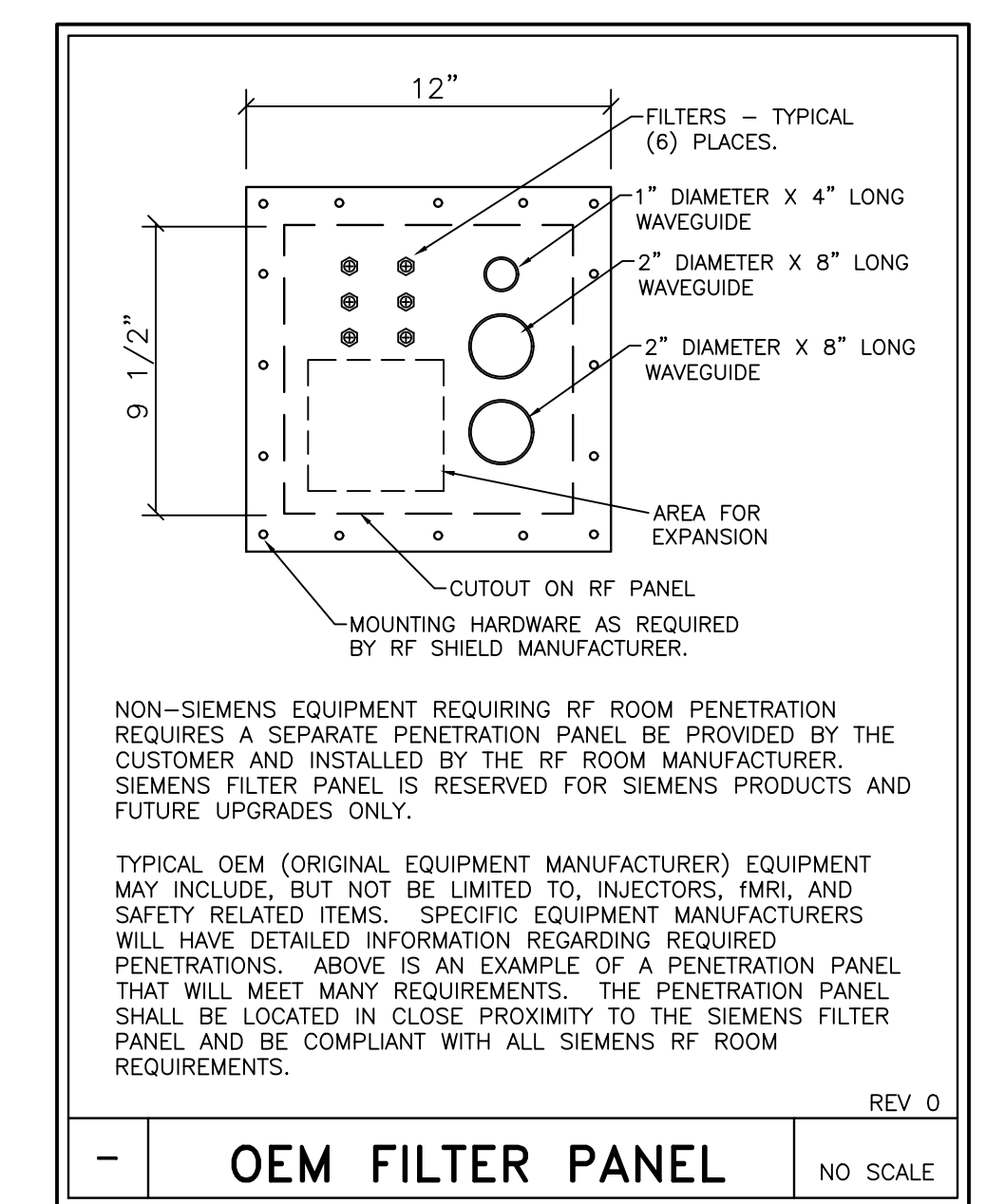
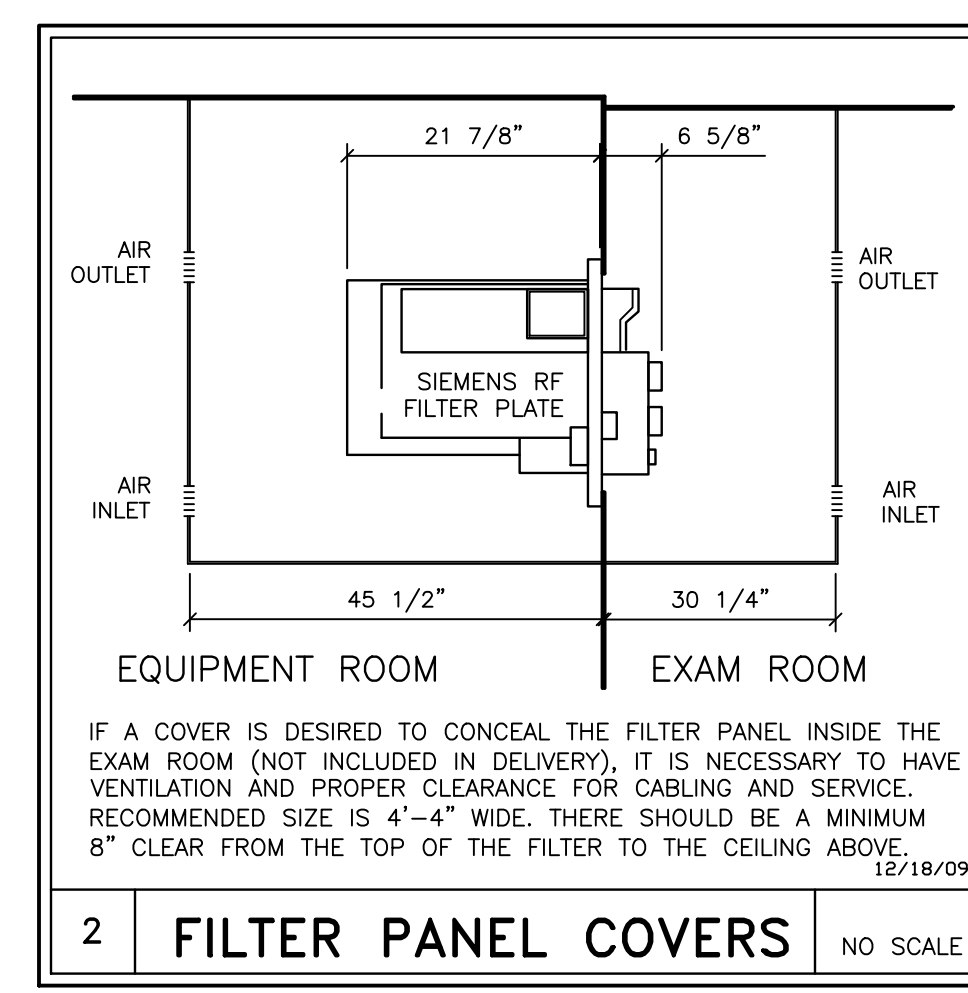
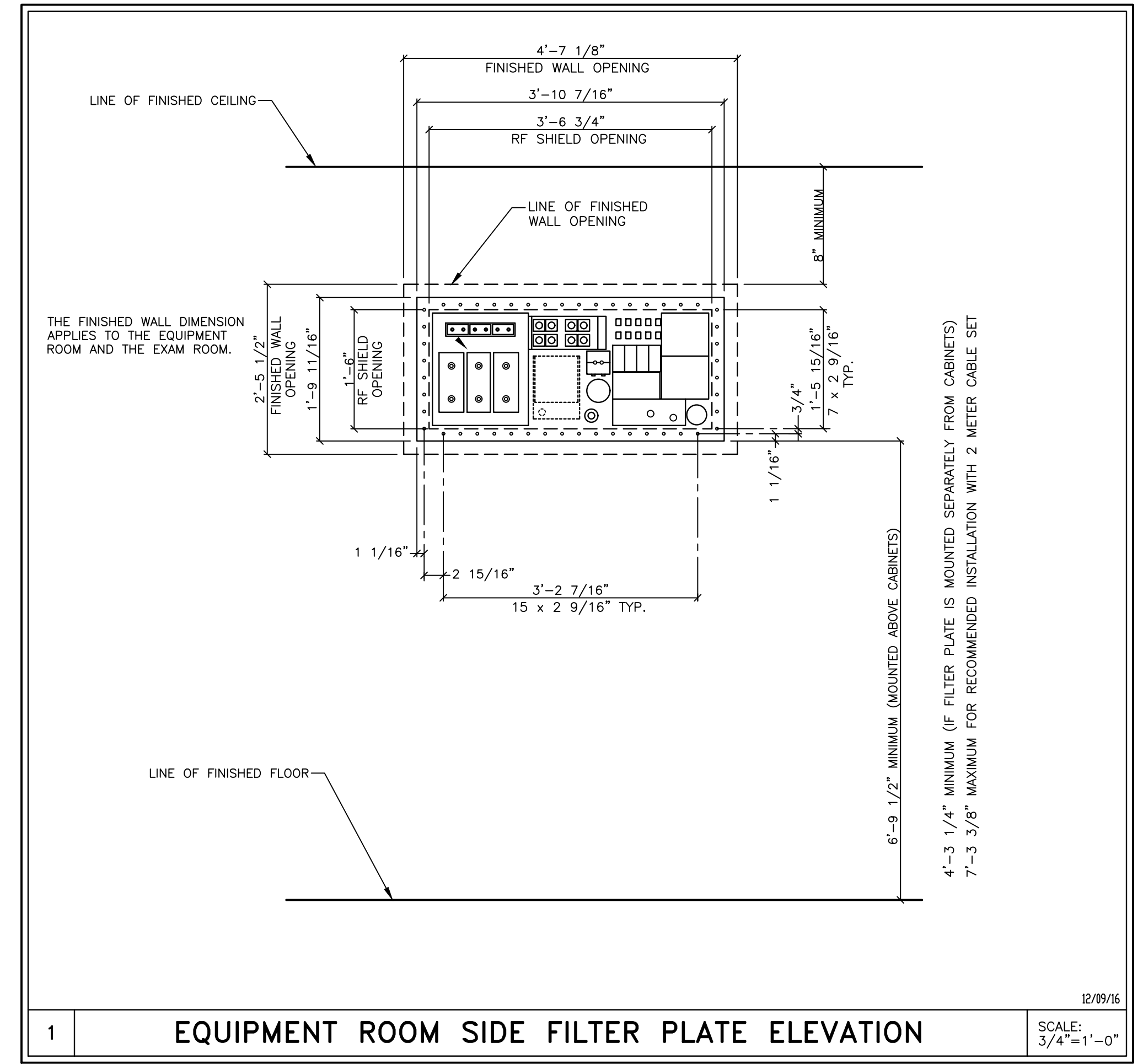
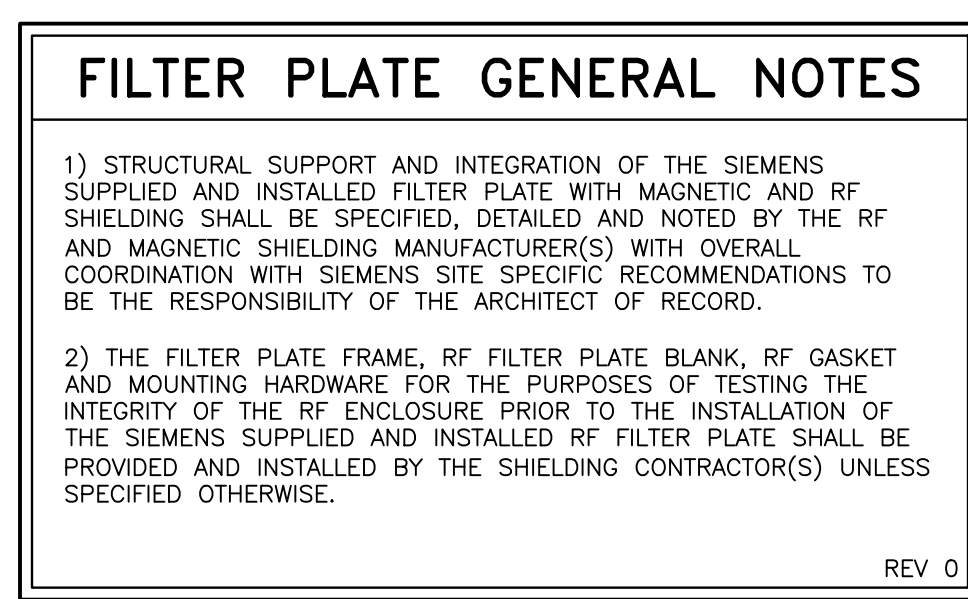
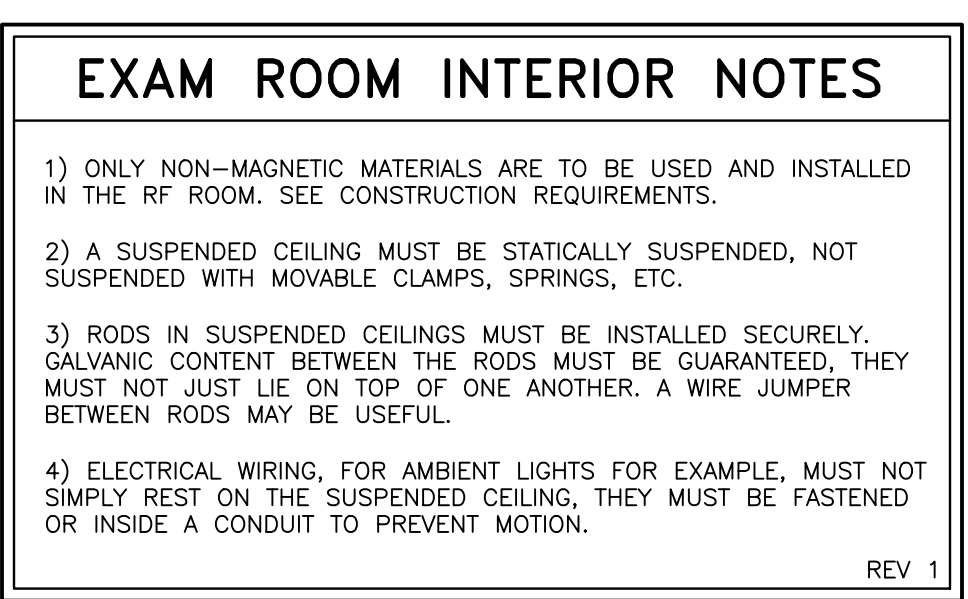
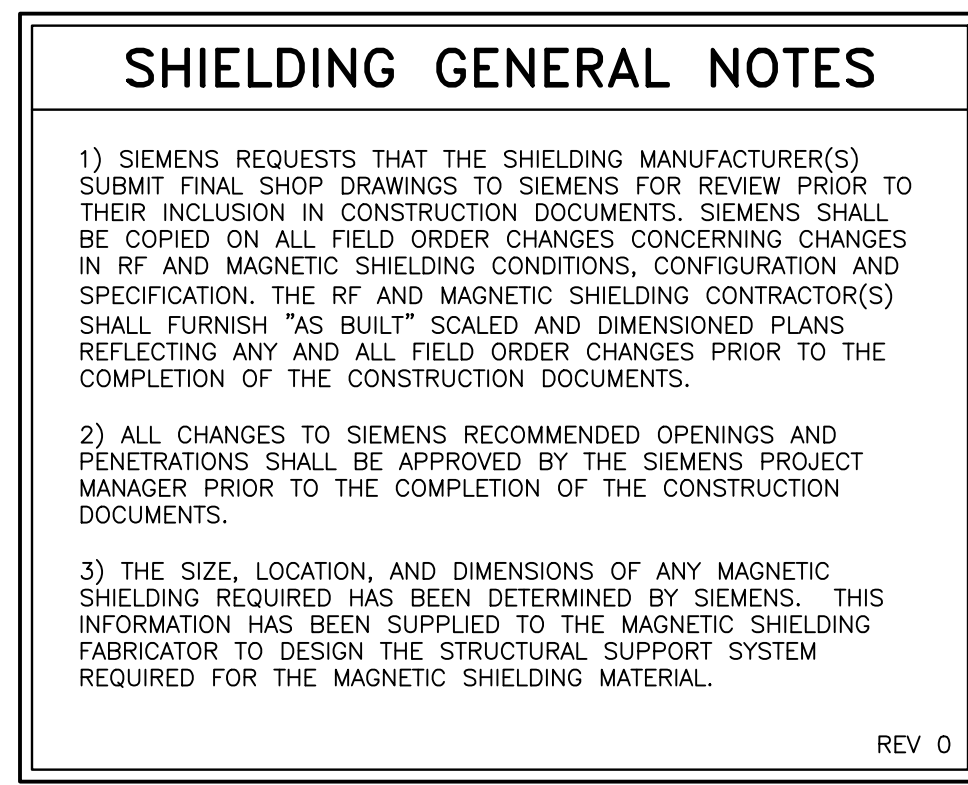
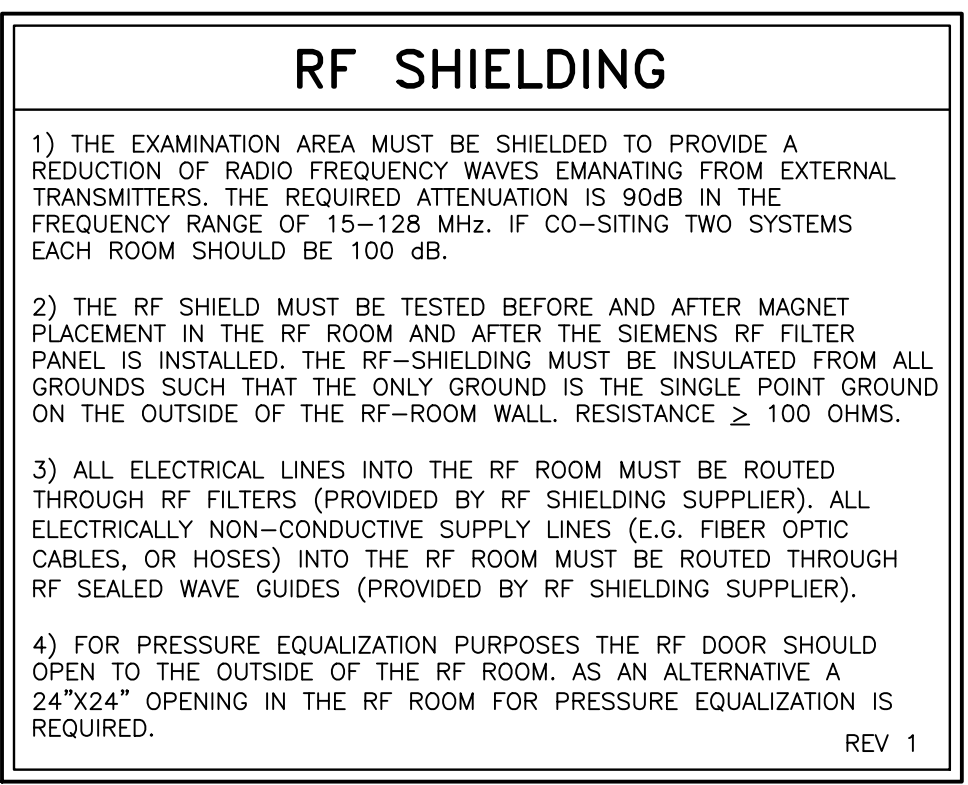
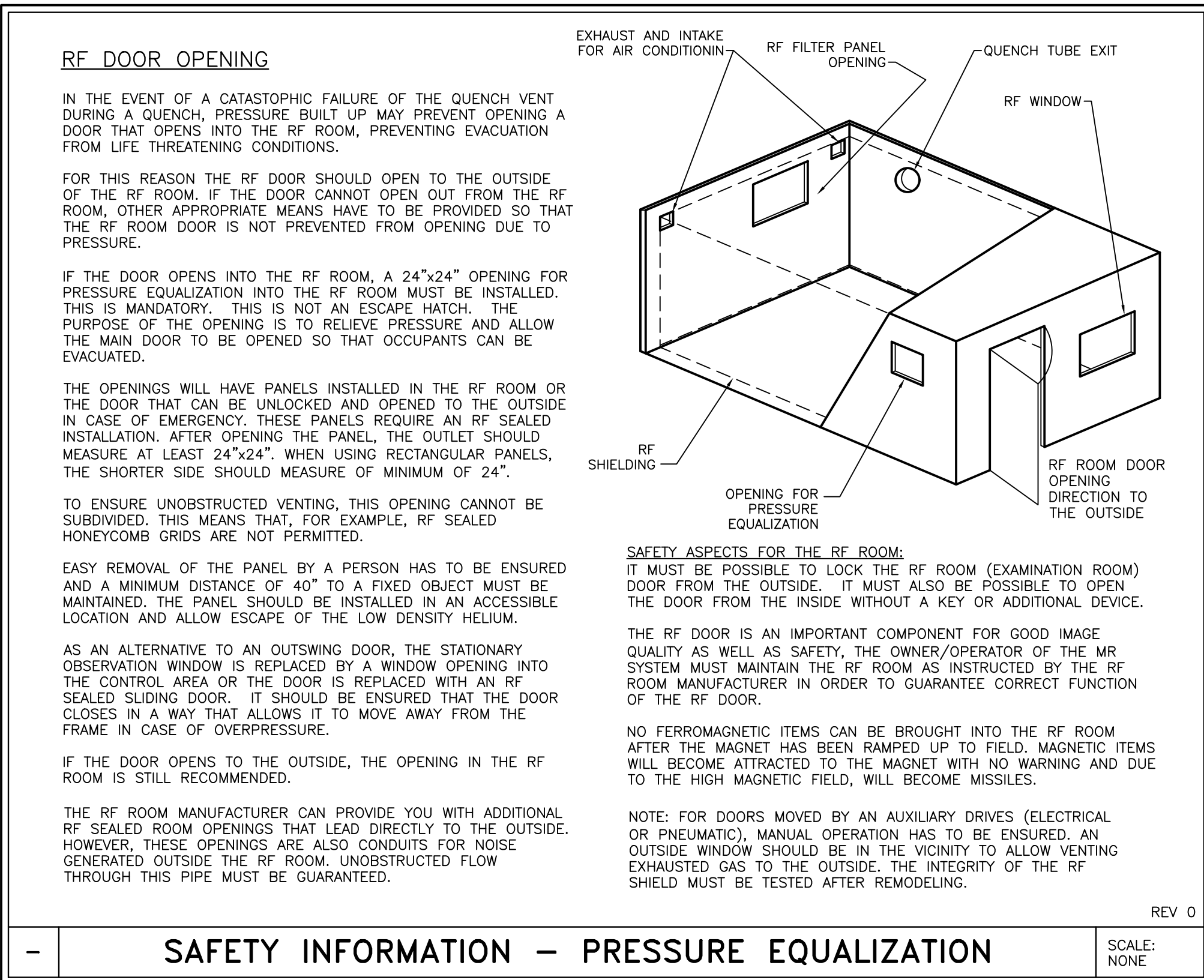
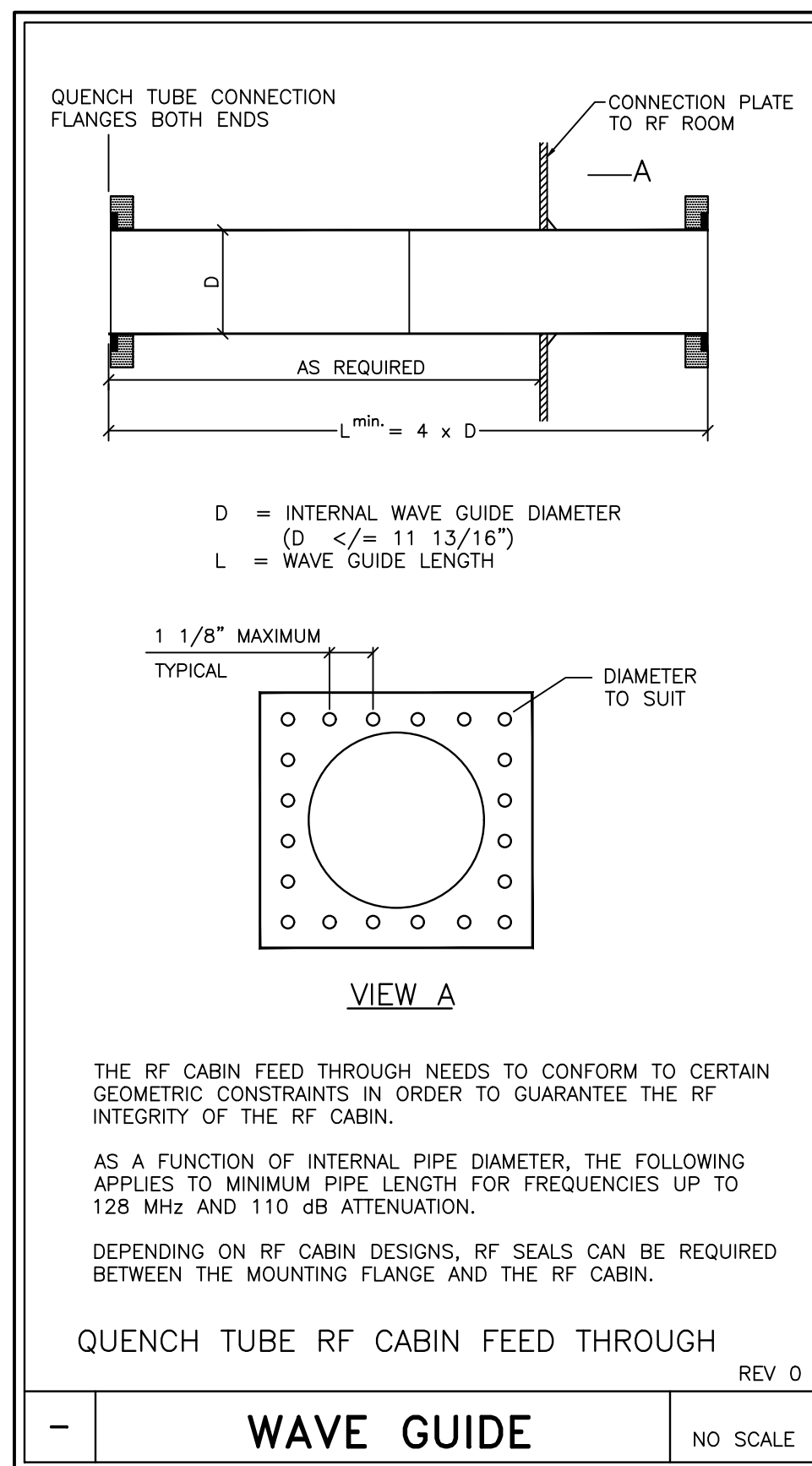


IMAGE QUALITY CONCERNS

BROADBAND RF NOISE IS A SINGLE TRANSIENT OR CONTINUOUS SERIES OF TRANSIENT DISTURBANCES CAUSED BY AN ELECTRICAL DISCHARGE. LOW HUMIDITY ENVIRONMENTAL CONDITIONS WILL HAVE HIGHER PROBABILITY OF ELECTRICAL DISCHARGE. THE ELECTRICAL DISCHARGE CAN OCCUR DUE TO ELECTRICAL ARCING OR MERELY STATIC DISCHARGE. SOME POTENTIAL SOURCES CAPABLE OF PRODUCING ELECTRICAL DISCHARGE INCLUDE:

- LOOSE HARDWARE/FASTENERS-VIBRATION OR MOVEMENT (ELECTRICAL CONTINUITY MUST ALWAYS BE MAINTAINED).
- FLOORING MATERIAL INCLUDING RAISED ACCESS FLOORING (PANELS AND SUPPORT HARDWARE) AND CARPETING.
- ELECTRICAL FIXTURES (LIGHTING FIXTURES, TRACK LIGHTING, EMERGENCY LIGHTING, BATTERY CHARGERS, OUTLETS).
- DUCTING FOR HVAC AND CABLE ROUTING.
- RF SHIELD SEALS (WALLS, DOORS, WINDOWS, ETC.).

REV 0



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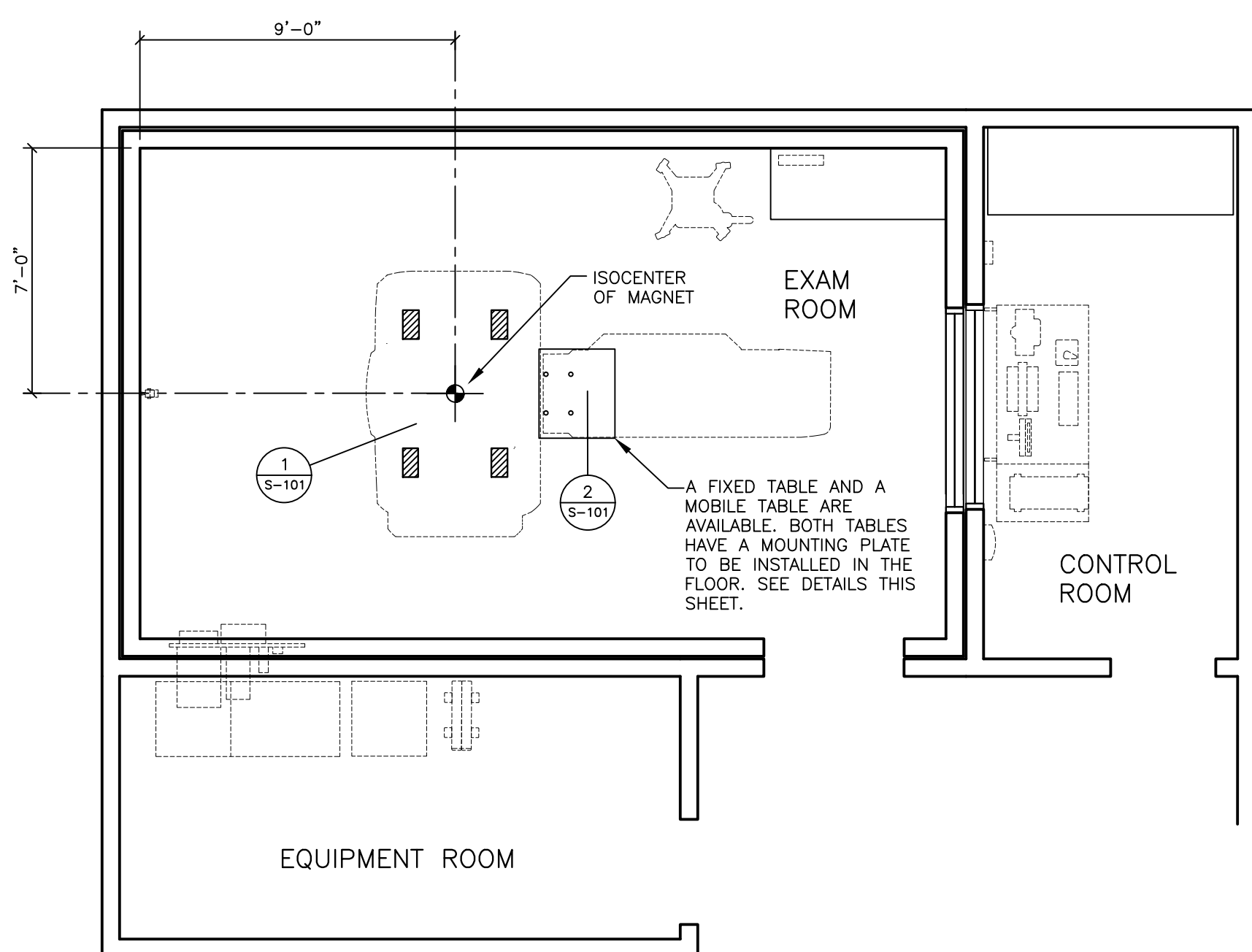
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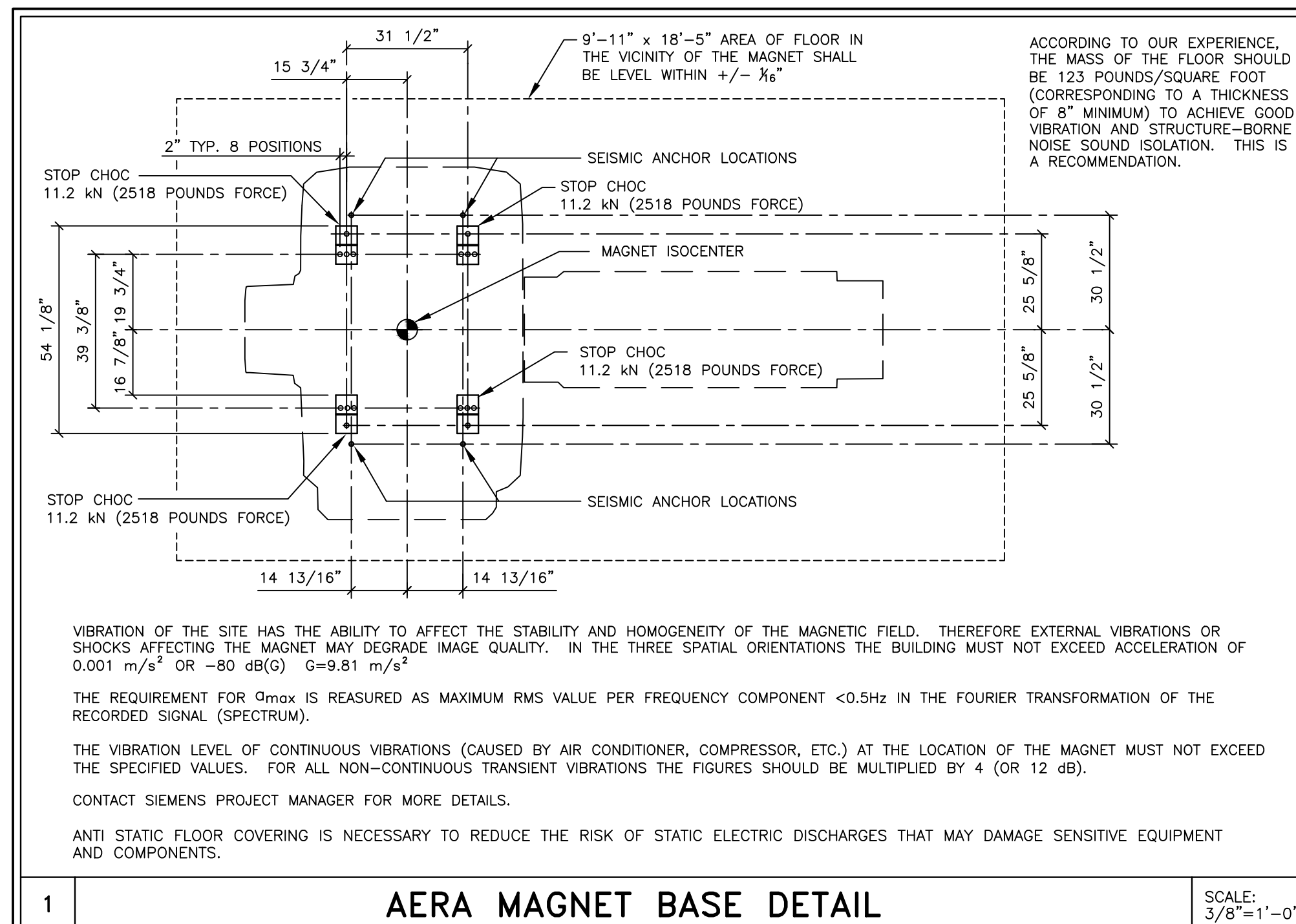
		SIEMENS MAGNETOM AERA XQ GRADIENTS TYPICAL FINAL DRAWING SET	
THE USE OR REPRODUCTION OF THIS TITLE BLOCK WITHOUT SIEMENS AUTHORIZATION WILL RESULT IN PROSECUTION UNDER FULL EXTENT OF THE LAW.		PROJECT #: 17058	SHEET: A-502
ALL RIGHTS ARE RESERVED.		SHEET 4 OF 10 DRAWN BY: B. HERRMANN	DATE: N.A.
SCALE: AS NOTED REF. #: ---		-ISSUE BLOCK-	



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

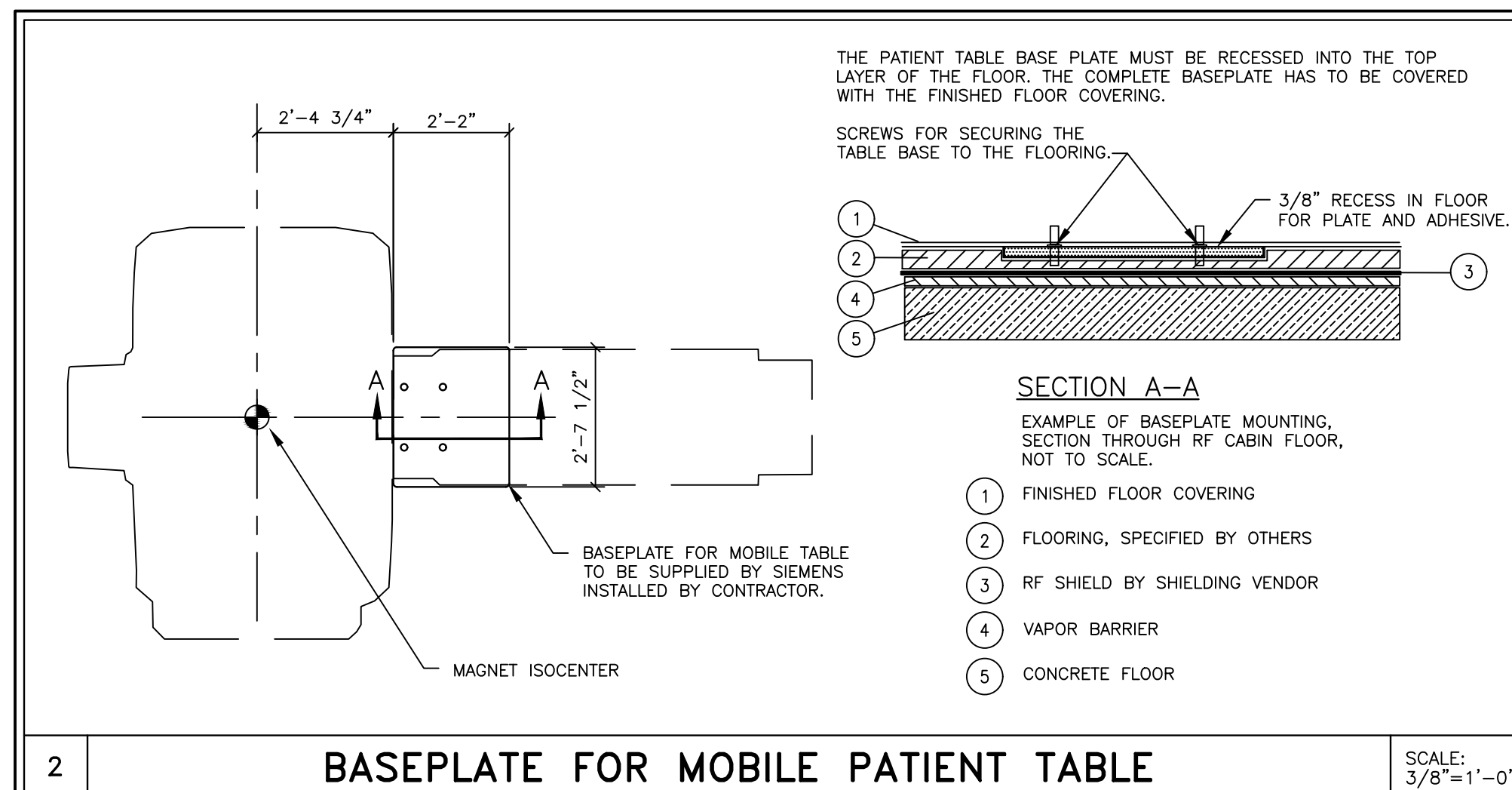
STRUCTURAL FLOOR PLAN

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



AERA MAGNET BASE DETAIL

SCALE: 3/8"=1'-0"



BASEPLATE FOR MOBILE PATIENT TABLE

SCALE: 3/8"=1'-0"

- STRUCTURAL NOTES**
- 1) THE CUSTOMER/CONTRACTOR SHALL FURNISH AND INSTALL ALL STRUCTURAL SUPPORT MEMBERS AND NEEDED HARDWARE FOR THE INSTALLATION OF THE SIEMENS EQUIPMENT.
 - 2) THE OVERHEAD STRUCTURAL SUPPORT SYSTEM SHALL BE FIXED, RIGID AND BRACED FOR SWAY.
 - 3) ALL STRUCTURAL SUPPORT MEMBERS SHALL BE TRUE, SQUARE, LEVEL, PARALLEL AND COPLANAR WITH RESPECT TO EACH OTHER, WITH A HORIZONTAL STRUCTURAL SUPPORT MEMBER TO BE LOCATED AND SET WITH A TRANSIT.
 - 4) ALL STRUCTURAL SUPPORT DETAILS SHOWN ARE SAMPLE DETAILS BASED UPON TYPICAL AND STANDARD BUILDING PRACTICES AND ARE NOT INTENDED AS ACTUAL CONSTRUCTION DETAILS. ALL CONSTRUCTION DETAILS AND SUPPORT CALCULATIONS SHALL BE PREPARED BY A PROFESSIONAL STRUCTURAL ENGINEER AT THE CUSTOMER'S EXPENSE. IN THE EVENT AN EXISTING SUPPORT SYSTEM IS TO BE USED, IT WILL BE THE CUSTOMER'S RESPONSIBILITY TO VERIFY THE INTEGRITY OF THAT SYSTEM.
 - 5) MOUNTING PLATES, FRAMES, AND HARDWARE SUPPLIED BY SIEMENS AS DETAILED IN THIS DRAWING SET ARE INSTALLED BY SIEMENS UNLESS OTHERWISE REQUIRED. ANY DEVIATION FROM THE PROVIDED MATERIALS OR MOUNTING METHODS MUST BE DESIGNED AND DOCUMENTED BY THE STRUCTURAL ENGINEER OF RECORD. ALTERNATE MOUNTING MATERIALS (I.E. ANCHORS, THREADED ROD, BACKING PLATES, ETC.) MUST BE SUPPLIED BY THE CUSTOMER/CONTRACTOR. SIEMENS MAY REQUIRE ASSISTANCE FROM THE CUSTOMER/CONTRACTOR WITH INSTALLATION WHEN UTILIZING ALTERNATE MOUNTING MATERIALS.
 - 6) ALL CEILING FIXTURES (I.E. AIR SUPPLY GRILLES, AIR RETURN GRILLES, EXHAUST GRILLES, SPRINKLER HEADS, INCANDESCENT AND FLUORESCENT LIGHT FIXTURES, INTERCOM SPEAKERS, MEDICAL GAS COLUMNS, ETC.) SHALL BE INSTALLED FLUSH MOUNTED WITH THE FINISHED CEILING TO PROVIDE FREE AND UNRESTRICTED TRAVEL OF THE SMS CEILING MOUNTED EQUIPMENT.
 - 7) THE STRUCTURAL PLANNING AS SHOWN ON THE 1/4" STRUCTURAL PLAN HAS BEEN COORDINATED WITH THE EQUIPMENT LOCATION AS SHOWN ON THE 1/4" EQUIPMENT LAYOUT PLAN. FOR THIS REASON, ANY DEVIATIONS FROM THE STRUCTURAL PLANNING AS SHOWN MUST BE APPROVED BY SMS PLANNING DEPARTMENT.
 - 8) THE STRUCTURAL ENGINEER OF RECORD SHALL BE RESPONSIBLE FOR THE DESIGN AND DETAIL OF FLOOR, WALL AND CEILING STRUCTURES IN ACCORDANCE WITH THE WEIGHTS, MOMENTS AND FORCES AS SHOWN ON OUR STRUCTURAL CALCULATIONS, OR INFORMATION, IN CONSIDERATION OF FORCES AS DETERMINED PER LOCAL GOVERNING BUILDING CODES.

CEILING HEIGHTS

EXAM ROOM	7'-11" MINIMUM
CONTROL ROOM	6'-11" MINIMUM
EQUIPMENT ROOM	7'-3" MINIMUM

SYM	DATE	DESCRIPTION
△	N.A.	TYPICAL REV 1
-ISSUE BLOCK-		

SIEMENS

MAGNETOM AERA

XQ GRADIENTS
TYPICAL FINAL DRAWING SET

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SCALE: AS NOTED REF. #: ---	SHEET 5 OF 10 DRAWN BY: B. HERRMANN	DATE: N.A.

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ELECTRICAL NOTES

- 1) COMPLIANCE: ELECTRICAL WORK SHALL BE IN COMPLIANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA-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 UL LISTED AND LABELED. THE CUSTOMER'S/CONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF NATIONAL ELECTRICAL CODE.
- 2) QUALITY ASSURANCE: THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN THE FIELD TO INSURE THAT THE NEW WORK WILL FIT 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 SIEMENS PROJECT MANAGER. ALL DIMENSIONS ARE FROM FINISHED SURFACES. CONDUIT AND PULL BOXES TO BE INSTALLED BY THE CUSTOMER/CONTRACTOR WITH LOCATIONS BEING FIELD VERIFIED BY SIEMENS PROJECT MANAGER.
- 3) POWER SUPPLY SOURCE: POWER SUPPLIES FOR SIEMENS HEALTHCARE EQUIPMENT SHALL BE DEDICATED CIRCUIT.
- 4) WORK FURNISHED BY CUSTOMER/CONTRACTOR: WORK NOT PROVIDED BY SIEMENS HEALTHCARE 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, DUCTS, WIRING TROUGHS, PULL BOXES, CONDUITS, CIRCUIT BREAKERS, EMERGENCY OFF BUTTONS, DOOR SWITCHES, WARNING LIGHTS, WIRING DEVICES, CONNECTORS, LIGHTING EQUIPMENT AND GROUNDING.
- 5) RACEWAY AND CONDUIT NOTES: ALL ITEMS IN THE MAGNET ROOM SHALL BE NON-FERROUS. ALL CONDUITS SHALL BE INSTALLED PER LATEST NATIONAL ELECTRICAL CODE. 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. 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 HEALTHCARE CABLES DO NOT EXCEED THE SPECIFIED MAXIMUM DISTANCES AS SHOWN ON THE ELECTRICAL DETAILS. PROVIDE ENCLOSED METAL SYSTEM (WIRE DUCT) WIRE DUCT RACEWAY SYSTEM WHERE SHOWN ON DRAWINGS WITH DIVIDERS TO SEPARATE THE DUCT (FOR POWER AND SIEMENS HEALTHCARE CABLING). DIVIDERS AND CROSSOVER PIECES TO BE PROVIDED AS NECESSARY. FOR UL 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 (I.E. ACCESS PANELS) 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 FLOOR FLOOR BOXES SHALL BE PROVIDED WITH FULLY GASKETED REMOVABLE COVERS. WHEN JUNCTION BOXES AND WIRE DUCT/RACEWAY ARE MOUNTED HIGHER THAN 14 FEET ABOVE FINISHED FLOOR, THE ELECTRICAL CONTRACTOR SHALL PROVIDE TWO ELECTRICIANS TO HELP THE SIEMENS INSTALL TEAM PULL SIEMENS SUPPLIED CABLES AT CUSTOMER EXPENSE. WHEN JUNCTION BOXES AND WIRE DUCT/RACEWAY ARE MOUNTED ABOVE A HARD CEILING (I.E. SHEET ROCK), A 24" x 24" ACCESS PANEL IS REQUIRED AT EACH JUNCTION BOX AND WITHIN 2 FEET OF EACH RACEWAY TRANSITION IN WIRE DUCT/RACEWAY. THERE MUST BE FREE AND CLEAR ACCESS TO JUNCTION BOXES AND WIRE DUCT/RACEWAY. WHEN ACCESS PANELS ARE LOCATED MORE THAN 3 FEET FROM JUNCTION BOXES AND WIRE DUCT/RACEWAY THE ELECTRICAL CONTRACTOR SHALL PROVIDE TWO ELECTRICIANS TO HELP SIEMENS INSTALL TEAM PULL SIEMENS SUPPLIED CABLES AT CUSTOMER EXPENSE. 6) WIRING: WIRING SHALL BE 600 VOLT CLASS, STRANDED TYPE THIN-THIN, 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 THE CUSTOMER/ELECTRICAL CONTRACTOR. 7) ALL CIRCUIT BREAKERS SHALL BE RATED FOR 25 KV RMS SHORT CIRCUIT RATING.

ELECTRICAL LEGEND

SYM	SIZE	DESCRIPTION	REMARKS
AS	3"	OPENING IN FACE OF VERTICAL DUCT 5'-0" ABOVE FINISHED FLOOR IN LOCATION TO BE COORDINATED WITH THE ARCHITECT.	ALARM BOX
AS	18" x 18"	LOCATION FOR CABLES TO DROP OUT OF BOTTOM OF RACEWAY.	ELECTRONICS CABINETS
AS	AS REQUIRED	LOCATION FOR CABLES TO DROP OUT OF BOTTOM OF RACEWAY.	MAGNET CABLE ACCESS
AS	----	EMERGENCY POWER OFF BUTTONS, MOUNTED WITH CENTERLINE AT 5'-0" ABOVE FINISHED FLOOR. ALL PARTS ARE TO BE NON-FERROUS INSIDE THE RF ROOM. EXACT LOCATIONS ARE TO BE VERIFIED WITH THE ARCHITECT OF RECORD.	SEE POWER SCHEDULE, SHEET E-102
AS	----	SIEMENS RF FILTER PANEL TO BE MOUNTED ON RF SHIELDED WALL.	FILTER PANEL
AS	AS REQUIRED	NON-FERROUS PULL BOX MOUNTED FLUSH WITH FINISHED WALL MOUNTED 2'-0" ABOVE FINISHED FLOOR. PROVIDE NEATLY FINISHED AND REMOVABLE COVER WITH CABLE EXIT. EXACT LOCATION TO BE COORDINATED WITH THE ARCHITECT.	INJECTOR POWER SUPPLY- MUST BE LOCATED OUTSIDE OF 5m FIELD
AS	AS REQUIRED	PULL BOX MOUNTED FLUSH WITH FINISHED WALL IN EQUIPMENT ROOM, MOUNTED 2'-0" ABOVE FINISHED FLOOR. PROVIDE NEATLY FINISHED AND REMOVABLE COVER WITH CABLE EXIT. EXACT LOCATION TO BE COORDINATED WITH THE ARCHITECT.	INJECTOR POWER SUPPLY
AS	AS REQUIRED	PULL BOX MOUNTED FLUSH WITH FINISHED WALL IN CONTROL AREA, MOUNTED 2'-0" ABOVE FINISHED FLOOR. PROVIDE NEATLY FINISHED AND REMOVABLE COVER WITH CABLE EXIT. EXACT LOCATION TO BE COORDINATED WITH THE ARCHITECT.	INJECTOR CONTROL CONSOLE
AS	----	MAIN PANEL WITH MAIN BREAKER. EXACT LOCATION DETERMINED BY CUSTOMER/CONTRACTOR	SEE POWER SCHEDULE
AS	4" x 4"	OPENING IN FACE OF RACEWAY IN SHOWN LOCATION.	HOST COMPUTER
AS	AS REQUIRED	NON-FERROUS SINGLE GANG BOX MOUNTED FLUSH WITH FINISHED WALL MOUNTED 6'-0" ABOVE FINISHED FLOOR. PROVIDE NEATLY FINISHED AND REMOVABLE COVER WITH CABLE EXIT. EXACT LOCATION TO BE COORDINATED WITH THE ARCHITECT.	MAGNET STOP
AS	AS REQUIRED	PULL BOX MOUNTED FLUSH WITH FINISHED WALL REFER TO HEIGHT CHART A-501-3. THE PULL BOX CAN BE MOUNTED AT APPROXIMATELY 5'-0" ABOVE THE FINISHED FLOOR IN MOST CASES, DEPENDING ON THE DISTANCE FROM THE MAGNET TO THE WALL.	PATIENT SUPERVISION CAMERA
AS	AS REQUIRED	PULL BOX MOUNTED FLUSH WITH FINISHED WALL AT FLOOR LINE IN SHOWN LOCATION PROVIDED WITH 2" Ø OPENING IN FINISHED COVER.	LIEBERT 9XT4 UPS
AS	AS REQUIRED	PULL BOX MOUNTED ADJACENT TO WATER CHILLER PROVIDED WITH FLEX-TITE CONDUIT FROM PULL BOX TO KNOCK OUT PANEL ON CHILLER. COORDINATE WITH SIEMENS PROJECT MANAGER.	WATER CHILLER
AS	AS REQUIRED	PULL BOX MOUNTED FLUSH WITH FINISHED WALL IN LOCATION COORDINATED WITH SIEMENS PROJECT MANAGER. WIRES ENTER CONTROL PANEL FROM THE BOTTOM.	CHILLER REMOTE CONTROL/ STATUS PANEL
AS	24"x4"	ALUMINUM LADDER TRAY, MOUNTED AT HEIGHT COORDINATED WITH SIEMENS PROJECT MANAGER, IN THE EXAM ROOM, MAINTAINING 12" CLEARANCE ABOVE THE TRAY FOR ACCESS. CABLE LADDER IS REQUIRED TO SUPPORT INTERCONNECTING CABLES BETWEEN THE FILTER PANEL AND THE MAGNET. A 15" MINIMUM CLEARANCE IS REQUIRED BETWEEN THE LADDER TRAY AND THE RF FILTER PANEL (F1). WHEN ROUTING ALL RACEWAYS REFER TO DETAIL E-501/2 TAKING CARE SO THAT MAXIMUM CABLE LENGTHS ARE NOT EXCEEDED. DO NOT LOCATE THIS CABLE TRAY ABOVE THE MAGNET.	CABLE TRAY SEE DETAIL E-501/1
AS	12"x4"	ALUMINUM LADDER TRAY, MOUNTED AT HEIGHT COORDINATED WITH SIEMENS PROJECT MANAGER IN EXAM ROOM. A 12" SEPARATION BETWEEN CD1 AND CD2 MUST BE MAINTAINED. DO NOT LOCATE THIS CABLE TRAY ABOVE THE MAGNET.	CABLE TRAY SEE DETAIL E-501/1
AS	24"x4"	ALUMINUM LADDER TRAY, MOUNTED AT HEIGHT COORDINATED WITH SIEMENS PROJECT MANAGER IN EQUIPMENT ROOM MAINTAINING 12" CLEARANCE ABOVE THE TRAY FOR ACCESS. CABLE LADDER IS REQUIRED TO SUPPORT INTERCONNECTING CABLES BETWEEN THE EQUIPMENT ROOM AND THE RF FILTER PANEL (F1). AN 18" MINIMUM CLEARANCE IS REQUIRED BETWEEN THE LADDER TRAY AND THE FILTER PANEL.	CABLE TRAY SEE DETAIL E-501/1
AS	4" x 2"	HORIZONTAL DUCT SURFACE MOUNTED ON WALL IN CONTROL AREA AT FLOOR LINE AS SHOWN, FINISHED TO MATCH WALLS.	
AS	10" x 3-1/2"	VERTICAL DUCT MOUNTED FLUSH WITH FINISHED WALL IN CONTROL AREA FROM ABOVE FINISHED CEILING TO FLOOR LINE PROVIDED WITH REMOVABLE FINISHED COVERS.	
AS	AS PER NEC	CONDUIT FROM FACILITY POWER TO MAIN PANEL "MP".	SEE POWER SCHEDULE, SHEET E-102
AS	AS PER NEC	CONDUIT FROM "MP" TO "EPO".	SEE POWER SCHEDULE, SHEET E-102
AS	AS PER NEC	CONDUIT FROM "EPO" TO "EPO" TO BE NON-FERROUS WHEN INSIDE THE RF ROOM. CUSTOMER/CONTRACTOR IS TO PROVIDE RF FILTERS FOR ALL NON-SIEMENS WIRING.	SEE POWER SCHEDULE, SHEET E-102
AS	(1) 2"	CONDUIT FROM "MP" TO END AT "CD3" (EPC) VIA FLEX CONDUIT. THERE MUST BE A DIELECTRIC SEPARATION BETWEEN THE CONDUIT AND THE CONNECTION AT THE SIEMENS EPC CABINET.	SEE POWER SCHEDULE, SHEET E-102
AS	(1) 2"	CONDUIT FROM FACILITY POWER TO "WCH".	
AS	(1) 3/4"	CONDUIT FROM "EPO" TO "UPS".	
AS	(1) 2"	CONDUIT FROM "UPS" TO "CD3" (EPC)	
AS	(2) 2 1/2"	CONDUIT FROM "VD1" (MRC) TO "CD3" (EPC).	NOT TO EXCEED 54 FT.
AS	(1) 1 1/2"	CONDUIT FROM "VD1" (AB) TO "CD3" (EPC).	NOT TO EXCEED 60 FT.
AS	(1) 1/2"	CONDUIT FROM "DS" TO "CD3" (EPC).	NOT TO EXCEED 60 FT.
AS	(1) 3/4"	CONDUIT FROM "MS" TO "CD1" (WIRES TO MAGNET) TO BE NON-FERROUS WHEN INSIDE THE RF ROOM.	NOT TO EXCEED 25 FT.
AS	(1) 1"	CONDUIT FROM "WCH" TO "WCS".	NOT TO EXCEED 150 FEET
AS	(1) 2"	NON-FERROUS CONDUITS FROM NEAR "F1" TO "IN1" FOR INJECTOR CABLES.	NOT TO EXCEED 40 FEET
AS	(1) 2"	CONDUITS FROM NEAR FILTER LOCATION TO "IN2".	
AS	(1) 2"	CONDUIT FROM "IN2" TO "IN3" FOR INJECTOR CABLES.	NOT TO EXCEED 150 FEET

CONTRACTOR SUPPLIED CABLES

FROM	VIA	TO	DESCRIPTION	REMARKS
SOURCE	1	MP	(3) PHASE CONDUCTORS, (1) FULL SIZE EQUIPMENT GROUND WIRE TO BE SIZED BY ELECTRICAL CONTRACTOR/ENGINEER.	
MP	2	EPO	DETERMINED BY ELECTRICAL CONTRACTOR.	
EPO	3	EPO	DETERMINED BY ELECTRICAL CONTRACTOR.	
MP	4, CD3	EPC	(3) 2/0 AND (1) 2/0 EQUIPMENT GROUND, TO REDUCE EMI (INTERFERENCE) THE POWER CABLES MUST BE SHIELDED. THIS CAN BE ACHIEVED BY USING EMT, WHICH IS CONSIDERED A SHIELDING DEVICE. IF CABLES ARE RUN IN FREE AIR SHIELDED CONDUCTORS MUST BE USED.	LANDED BY ELECTRICAL CONTRACTOR
SOURCE	5	WCH	(3) PHASE CONDUCTORS, (1) FULL SIZE EQUIPMENT GROUND WIRE TO BE SIZED BY ELECTRICAL CONTRACTOR/ENGINEER.	
EPO	6	UPS	DETERMINED BY ELECTRICAL CONTRACTOR.	6 FOOT TAILS
WCH	12	WCS	THERMOSTAT WIRE SUPPLIED AND INSTALLED BY CONTRACTOR.	

CEILING HEIGHTS

EXAM ROOM 7'-11" MINIMUM
 CONTROL ROOM 6'-11" MINIMUM
 EQUIPMENT ROOM 7'-3" MINIMUM

SYM	DATE	DESCRIPTION
△	N.A.	TYPICAL REV 1
-ISSUE BLOCK-		

SIEMENS
MAGNETOM AERA
 XQ GRADIENTS
 TYPICAL FINAL DRAWING SET

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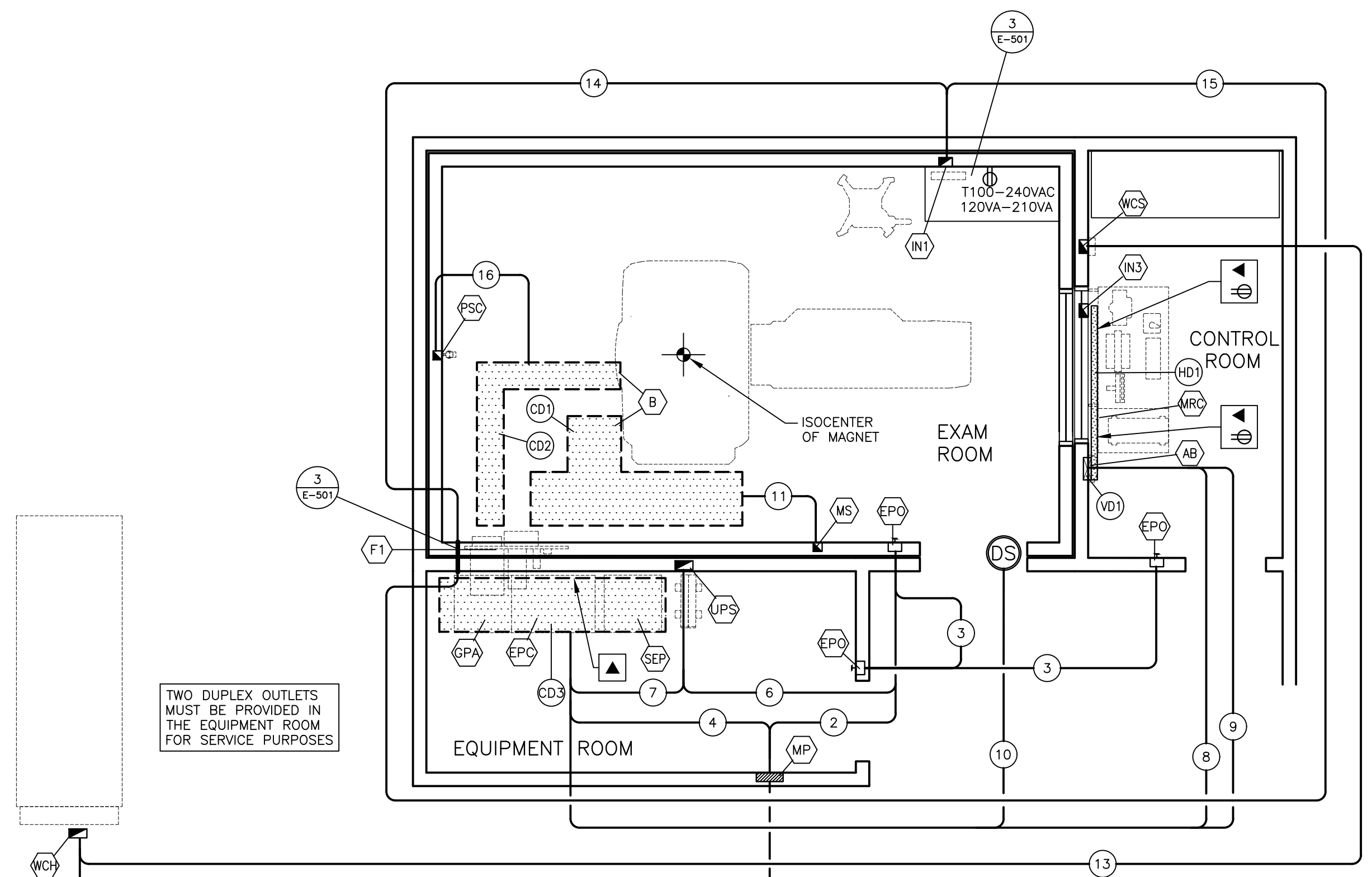
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PROJECT #:
17058

SHEET: **E-101**

SHEET 6 OF 10 DRAWN BY: B. HERRMANN

DATE: N.A.



TWO DUPLEX OUTLETS MUST BE PROVIDED IN THE EQUIPMENT ROOM FOR SERVICE PURPOSES

POWER TO CHILLER MAY COME DIRECTLY FROM FACILITY, OR VIA A UPS OFFERED OPTIONALLY THROUGH SIEMENS.
 DIMPLEX 45KW CHILLER POWER: 480 VOLT, 70 AMP 3-PHASE POWER FROM FACILITY.

DEDICATED POWER SOURCE, SUPPLIED AND INSTALLED BY CUSTOMER/CONTRACTOR. SEE "POWER SCHEDULE".

ELECTRICAL RACEWAY PLAN

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

SYMBOLS

ALL MAY NOT APPLY

⚠	CAUTION OR WARNING
📌	CRITICAL NOTE(S)
▨	PANEL OR ENCLOSURE BY CUSTOMER/CONTRACTOR
▭	OPENING IN RACEWAY OR TRENCHDUCT
▣	PULLBOX IN (FLOOR/WALL/CEILING)
▤	OPENING IN ACCESS FLOORING
Ⓢ	RF DOOR SWITCH - MASTER-CARR SUPPLY ROLLER LIMIT SWITCH 7076k14 PROVIDED BY CONTRACTOR, AND MOUNTED AT TOP OF DOOR. COORDINATE WITH SIEMENS PROJECT MANAGER.
Ⓜ	(EPO) EMERGENCY POWER OFF BUTTON
▭	CEILING DUCT
▨	SURFACE MOUNTED DUCT
▭	VERTICAL DUCT
▶	ETHERNET CONNECTION TO CUSTOMER'S INFORMATION SYSTEMS NETWORK IN AN ACCESSIBLE LOCATION (VERIFY WITH SIEMENS PROJECT MANAGER).
Ⓜ	110 VOLT, 20 AMP, HOSPITAL GRADE DUPLEX OUTLET LOCATED NEAR THE ETHERNET CONNECTION.

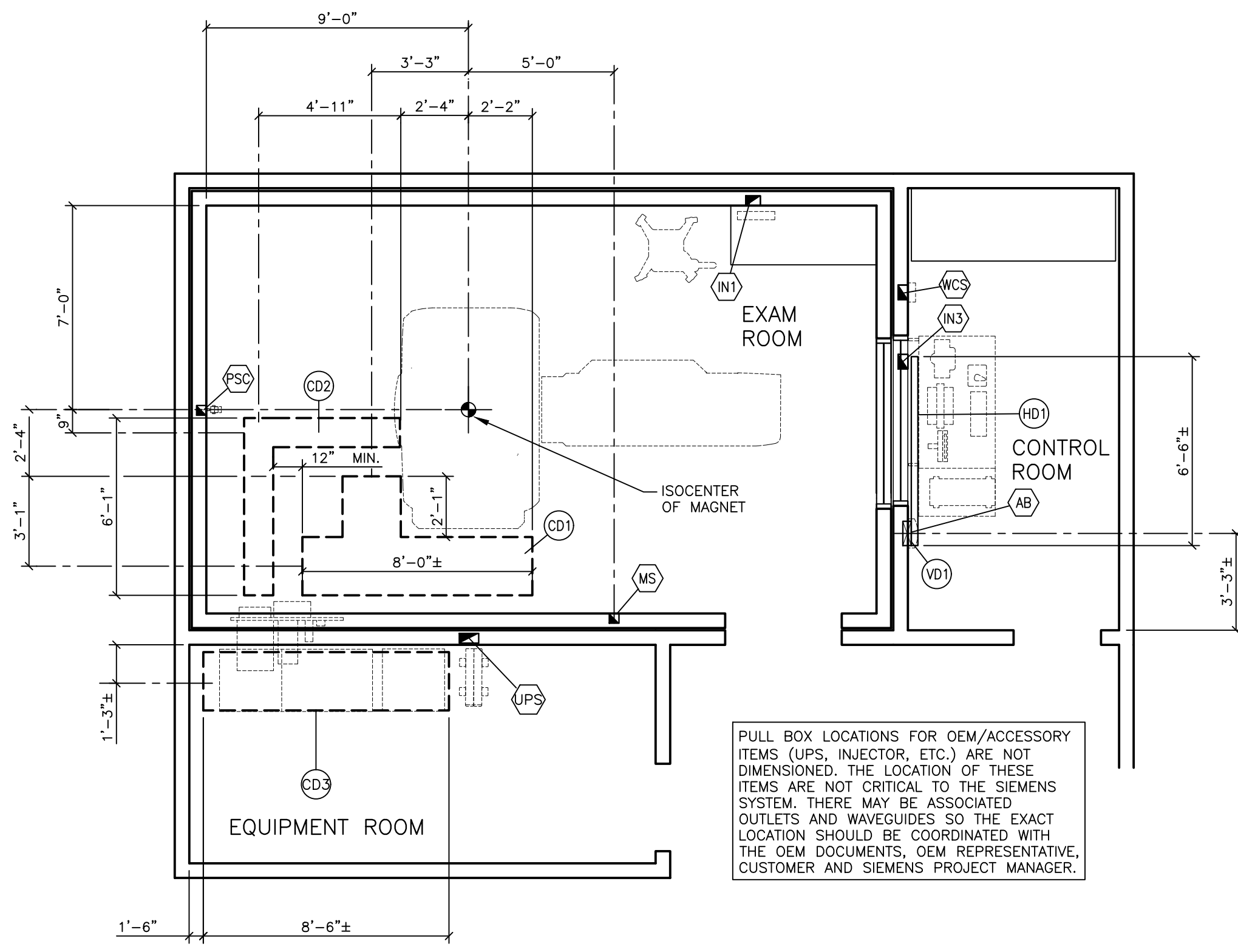
REV 2

ATTENTION:

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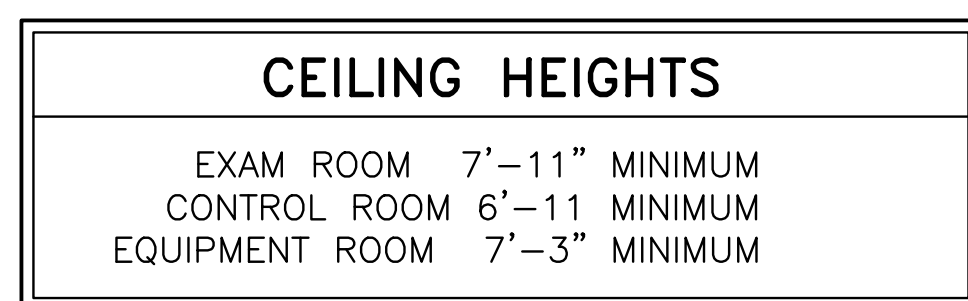
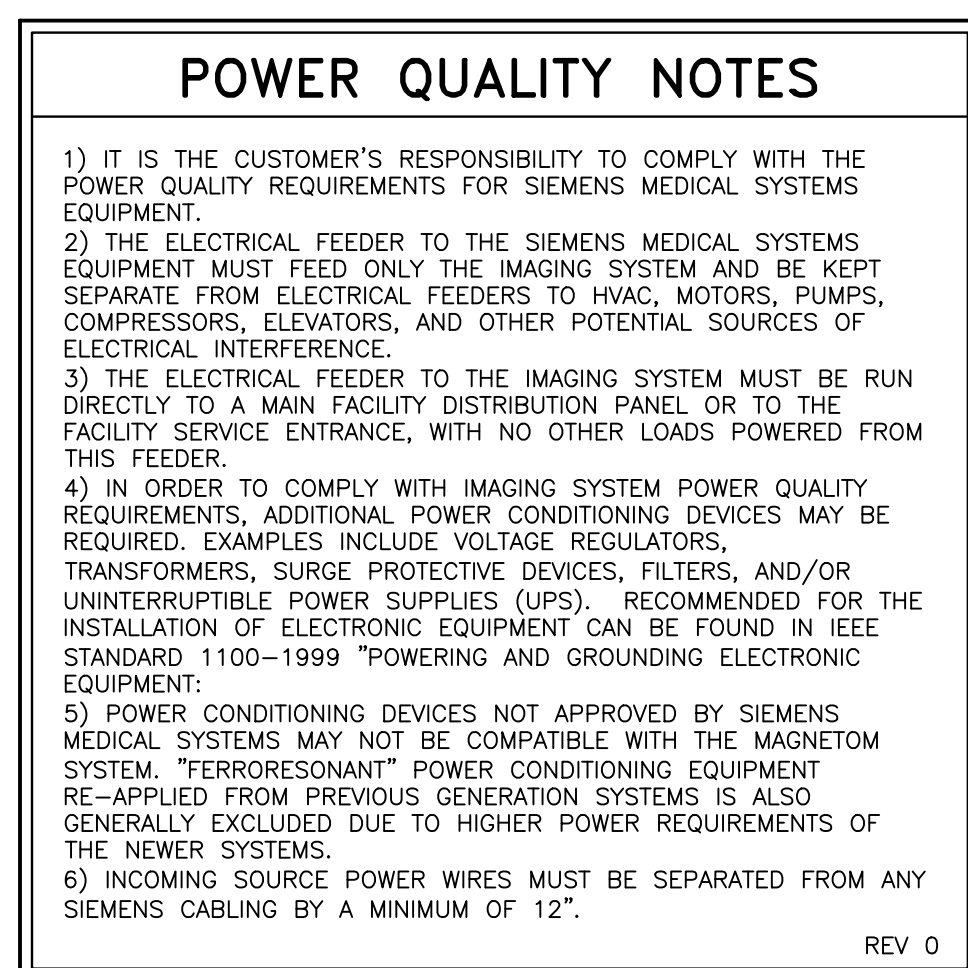
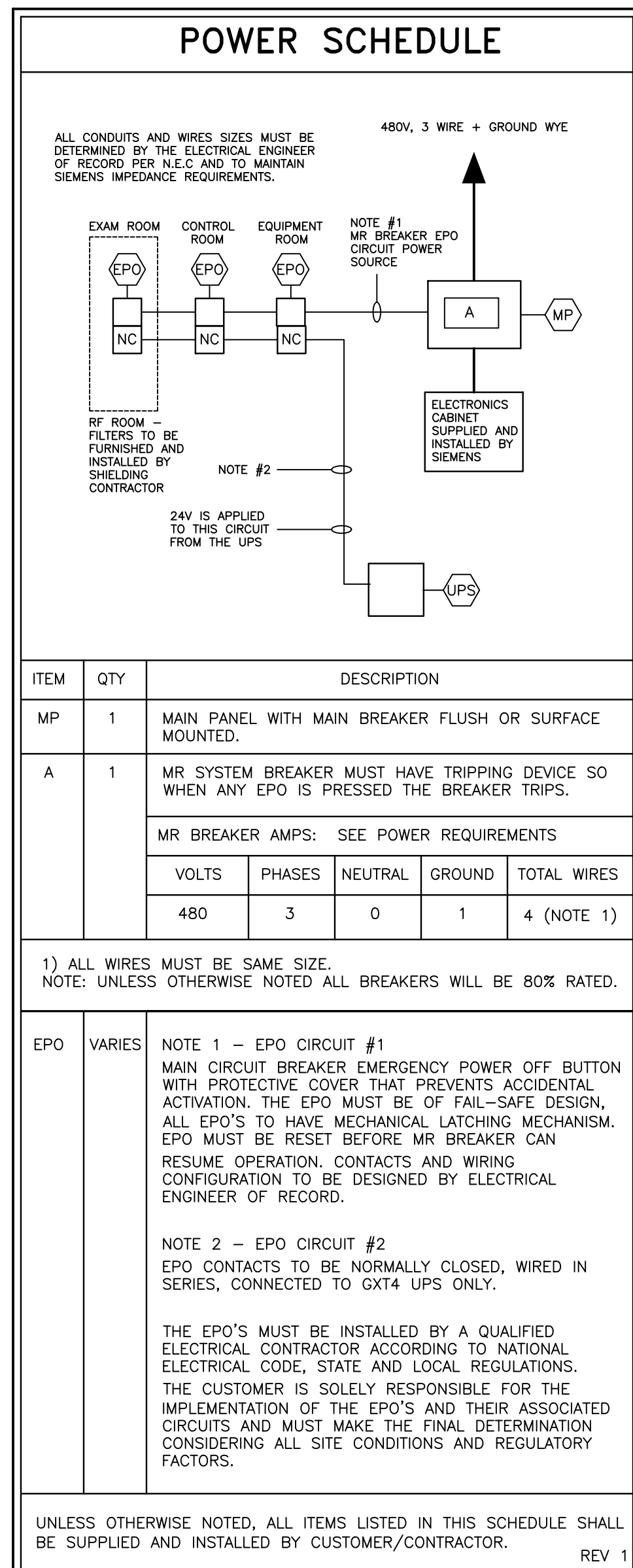
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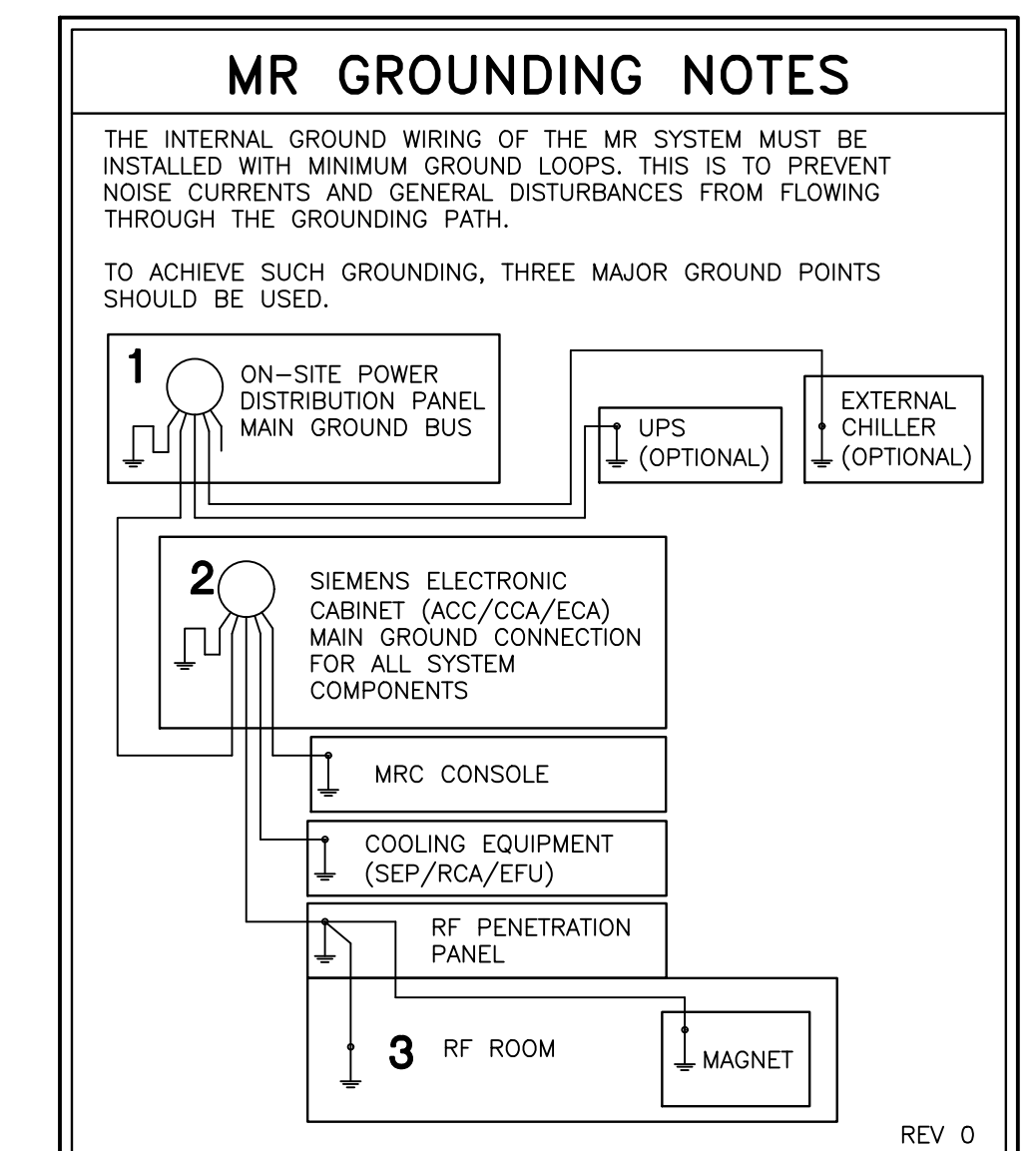
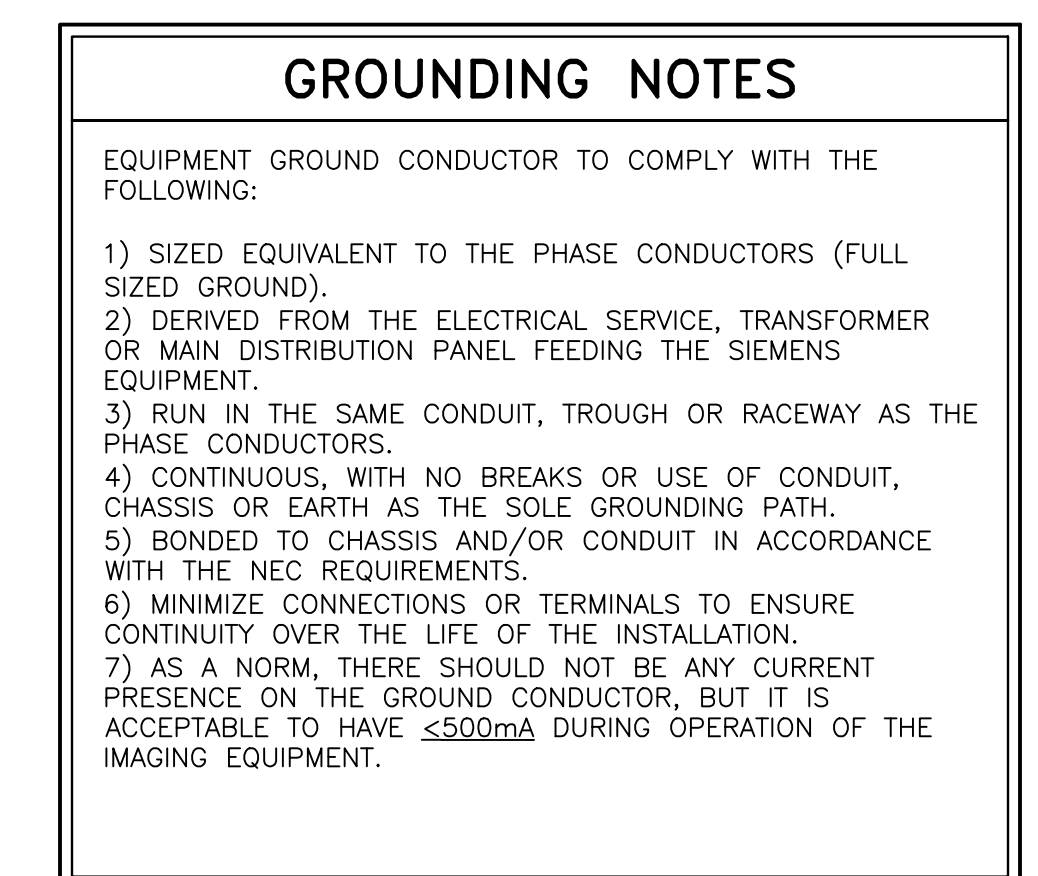
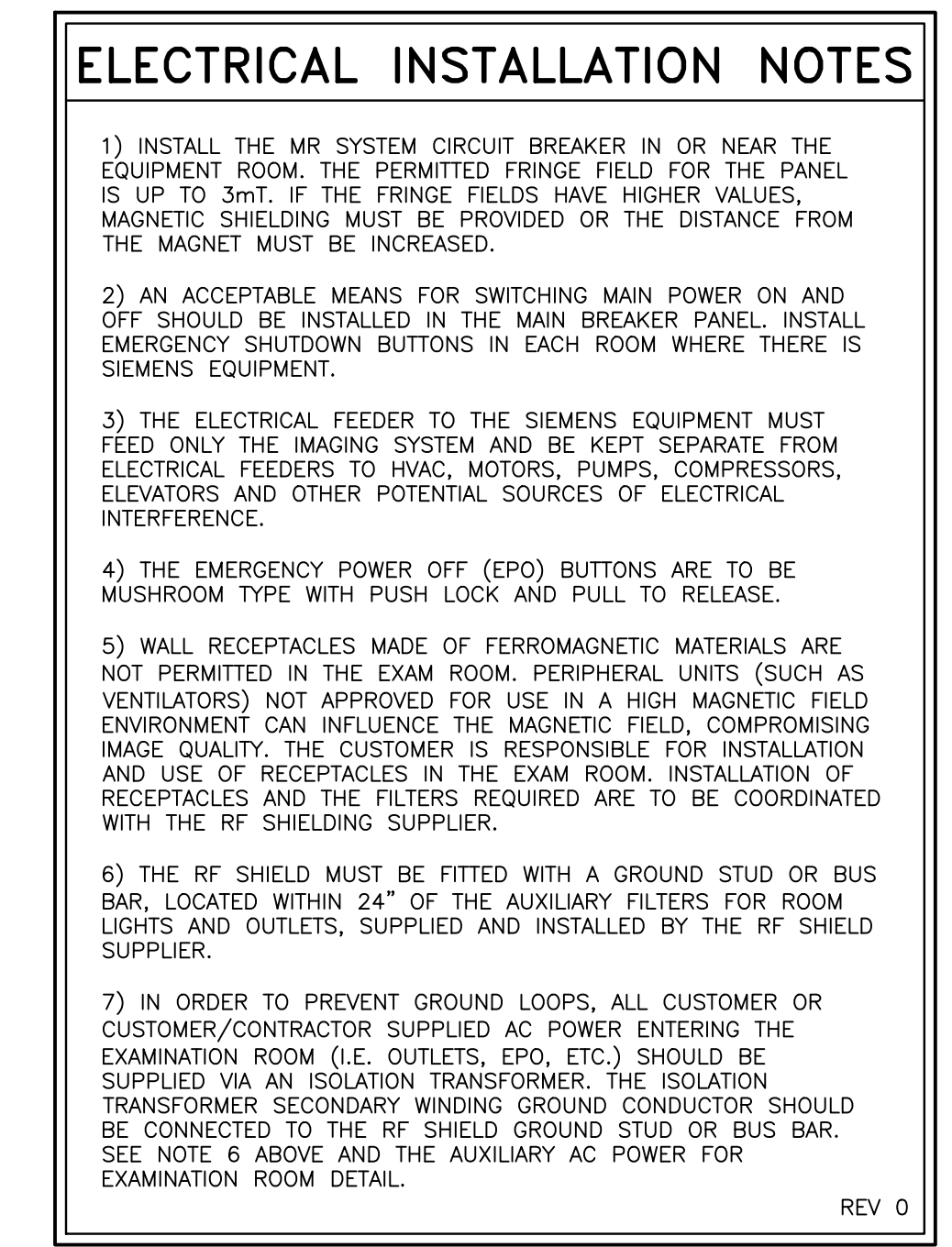
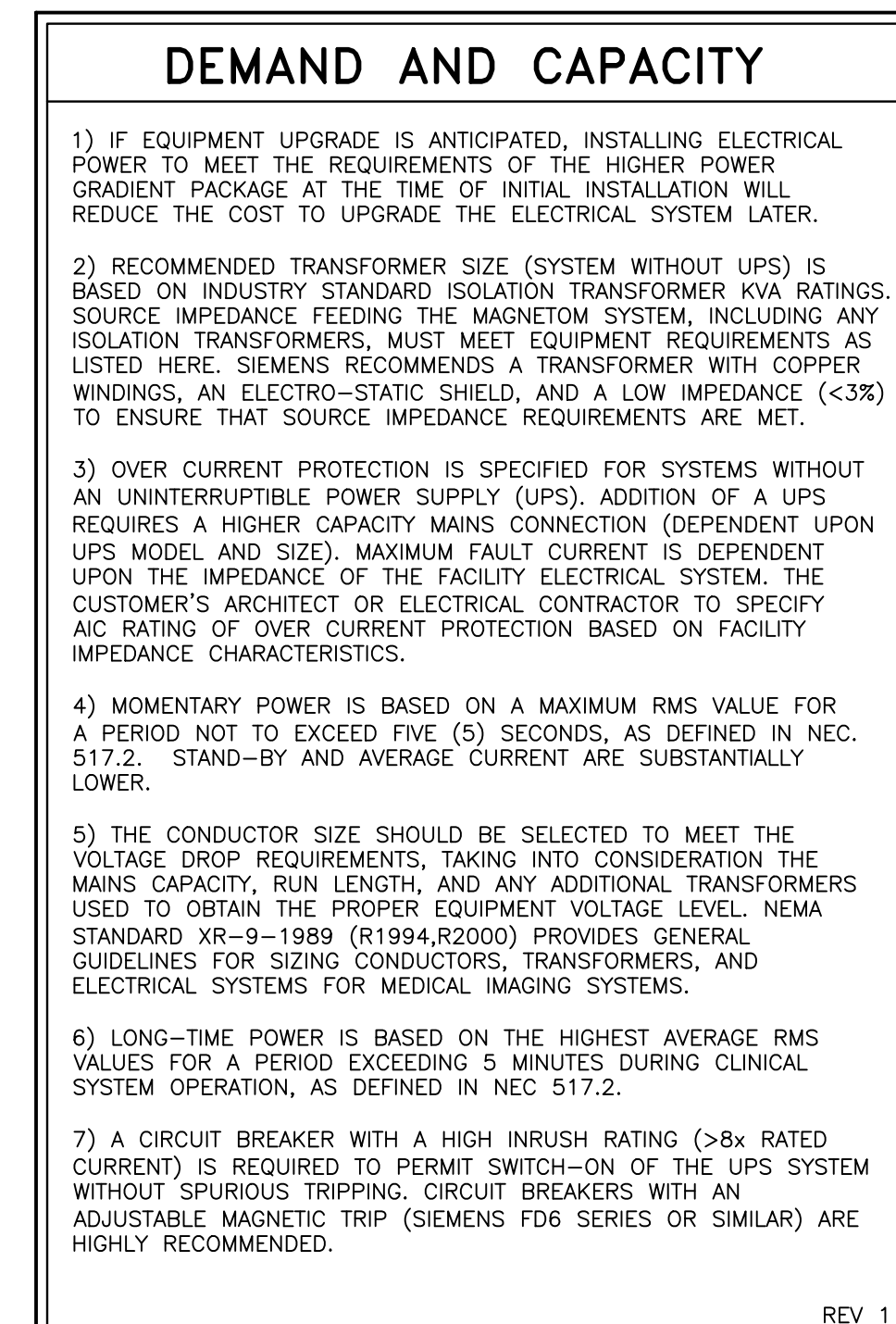
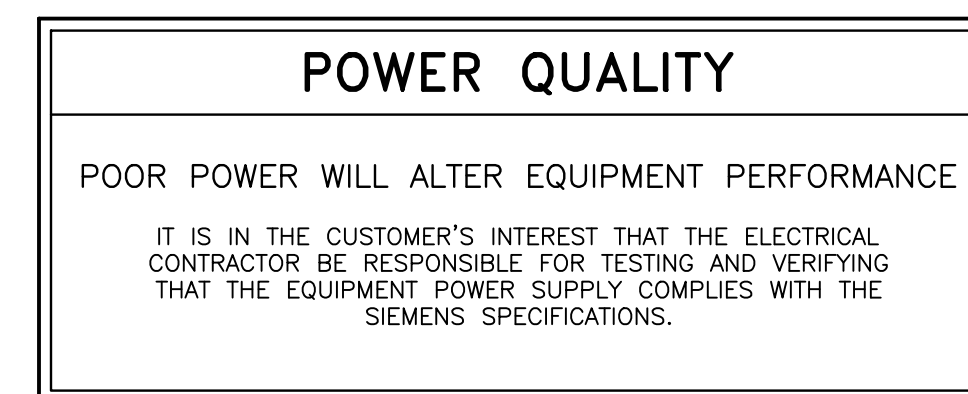
ELECTRICAL DIMENSION PLAN

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



POWER REQUIREMENTS

VOLTAGE VARIATION: 480 VAC ±10% FOR ALL LINE AND LOAD CONDITIONS VOLTAGE UNBALANCE: 2% MAXIMUM DIFFERENCE BETWEEN PHASES	
FREQUENCY:	60 Hz ± 1.0 Hz
LINE IMPEDANCE:	<140 mΩHMS
READY FOR MEASUREMENT/ PLUS SEP	9.35 kW/1.8kW
CONNECTION VALUE	88 kVA
MOMENTARY POWER	143 kVA
MR SYSTEM BREAKER SIZE (A)	150 A
ALL BREAKERS ARE RATED AT 80%	



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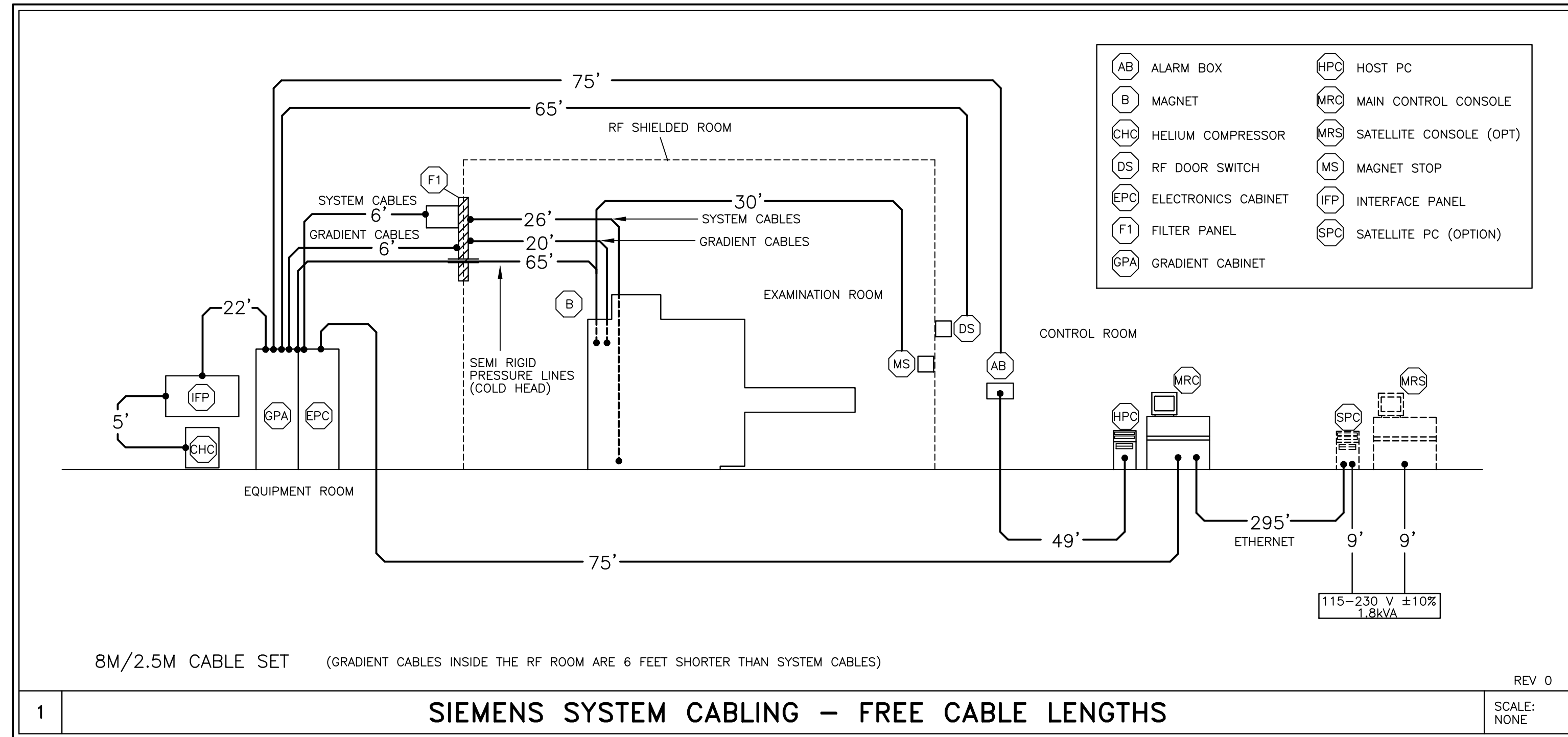
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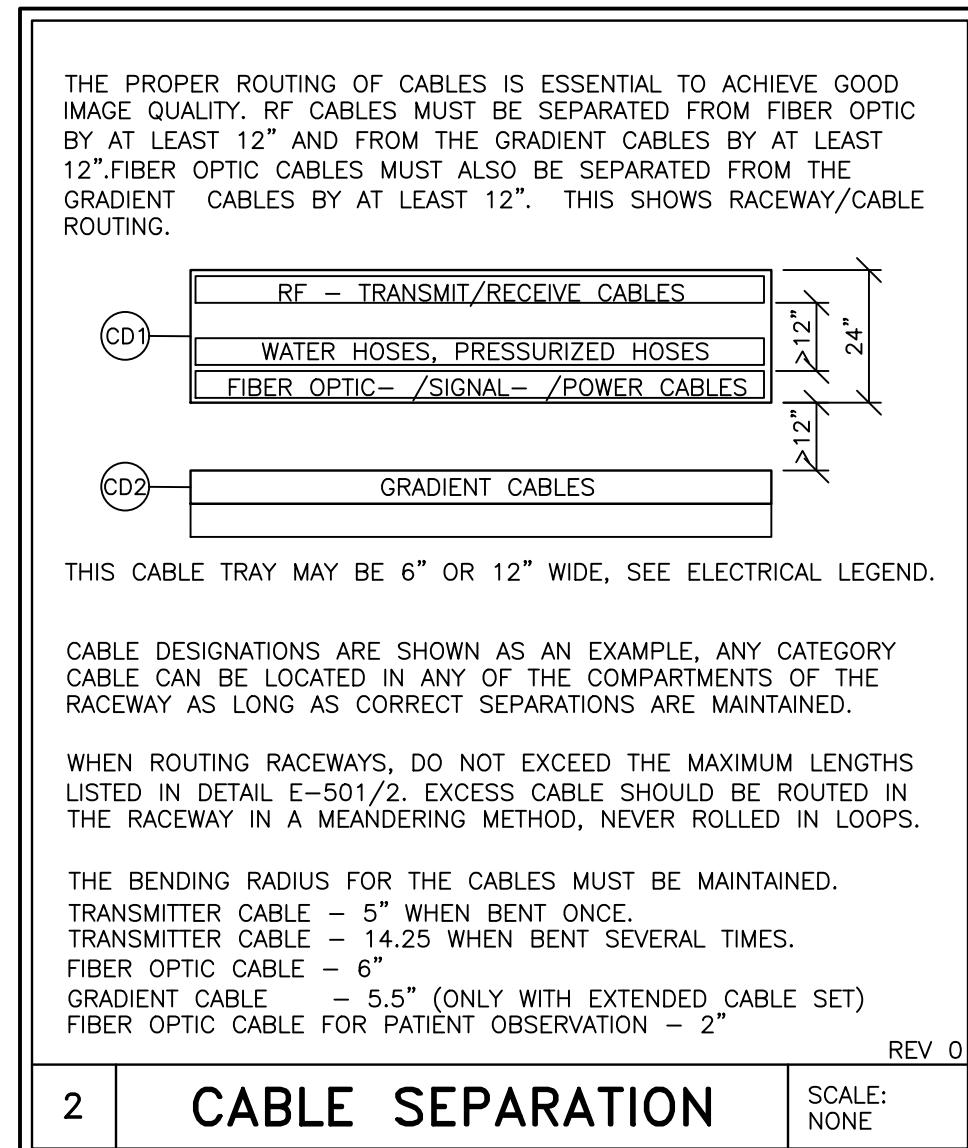
SIEMENS		MAGNETOM AERA	
XQ GRADIENTS TYPICAL FINAL DRAWING SET		PROJECT #: 17058	
THE USE OR REPRODUCTION OF THIS TITLE BLOCK WITHOUT SIEMENS AUTHORIZATION WILL RESULT IN PROSECUTION UNDER FULL EXTENT OF THE LAW.		SHEET: E-102	
ALL RIGHTS ARE RESERVED.		DRAWN BY: B. HERRMANN	
SCALE: AS NOTED		DATE: N.A.	

SYM	DATE	DESCRIPTION
△	N.A.	TYPICAL REV 1

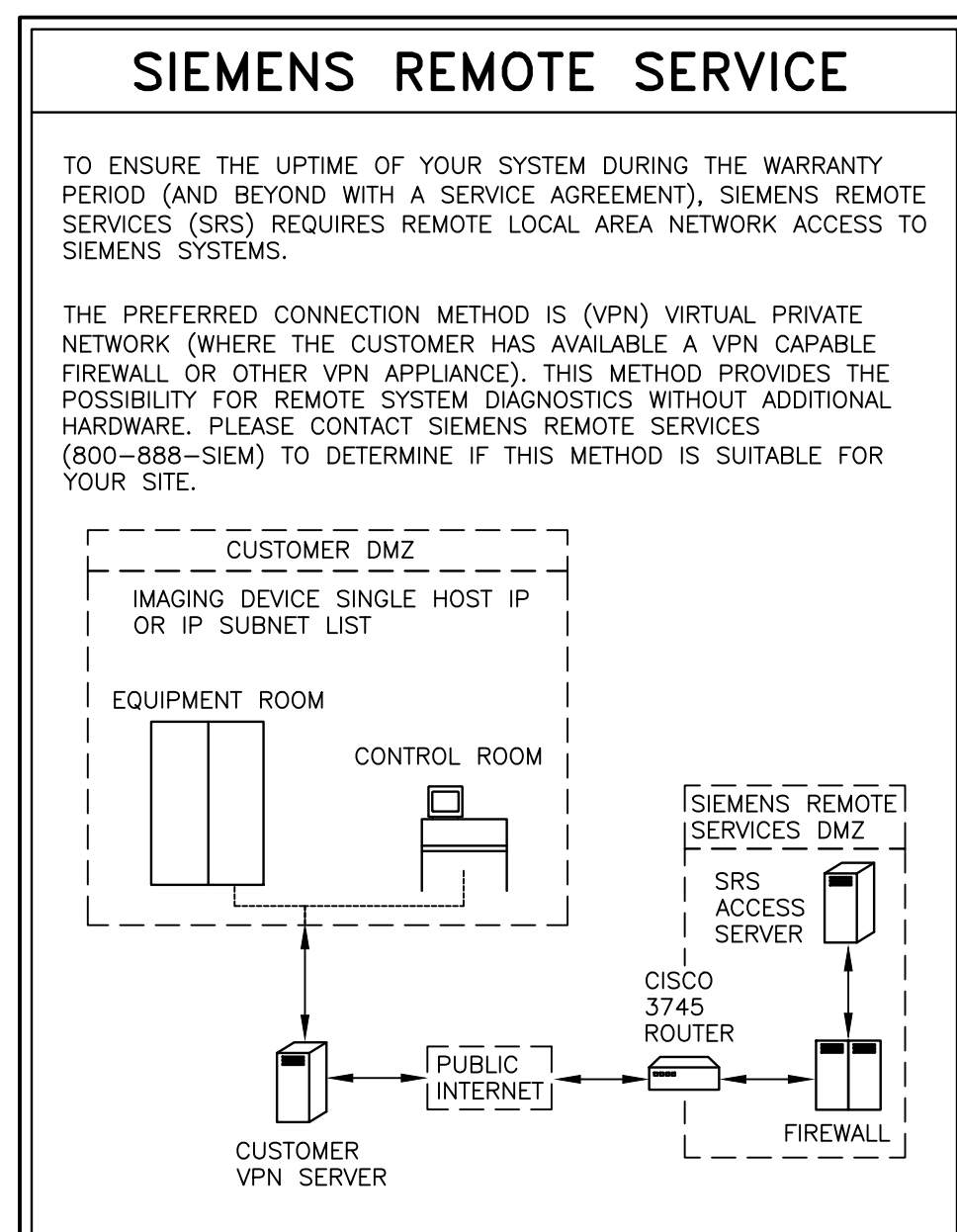
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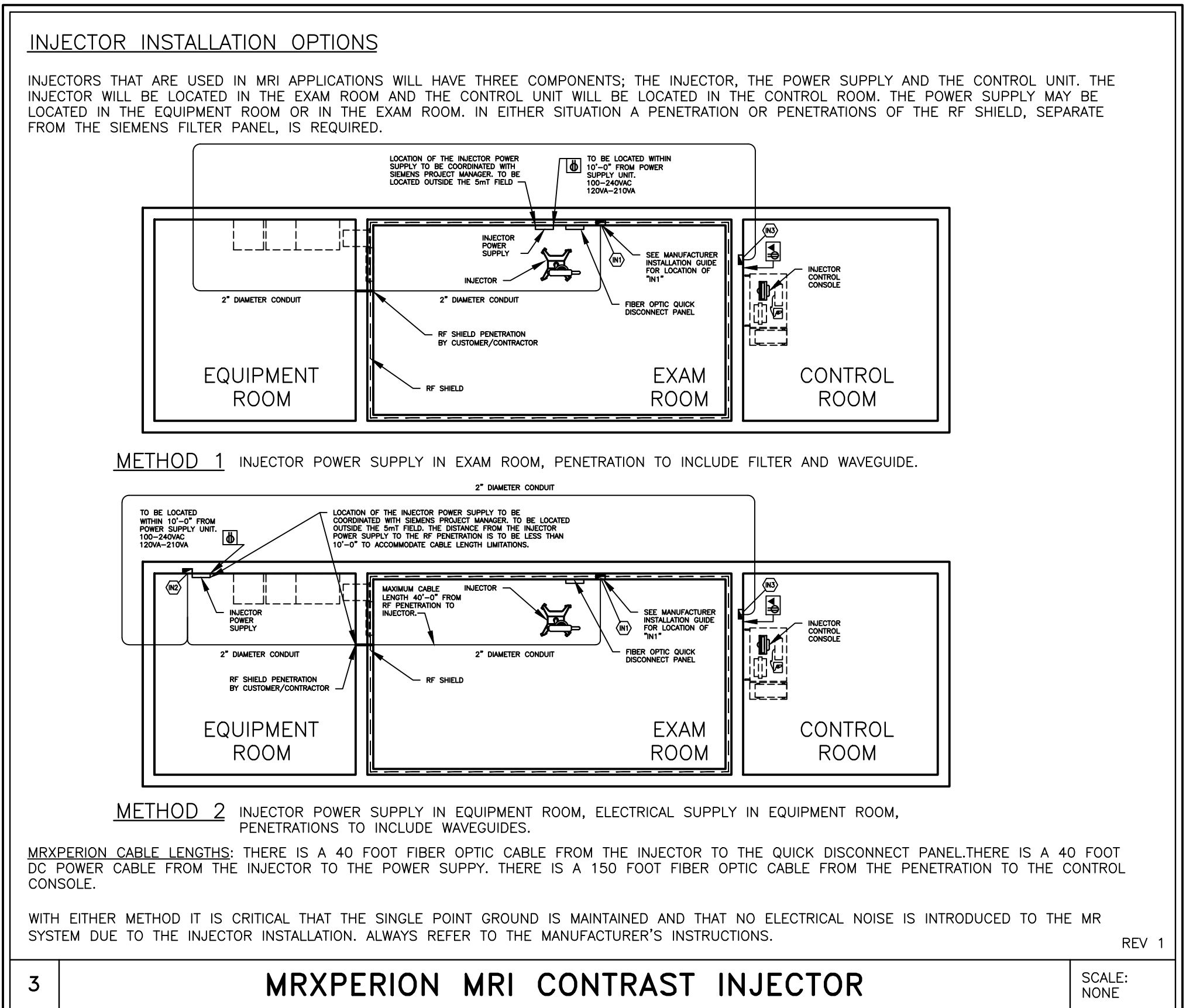
1 **SIEMENS SYSTEM CABLING - FREE CABLE LENGTHS** SCALE: NONE REV 0



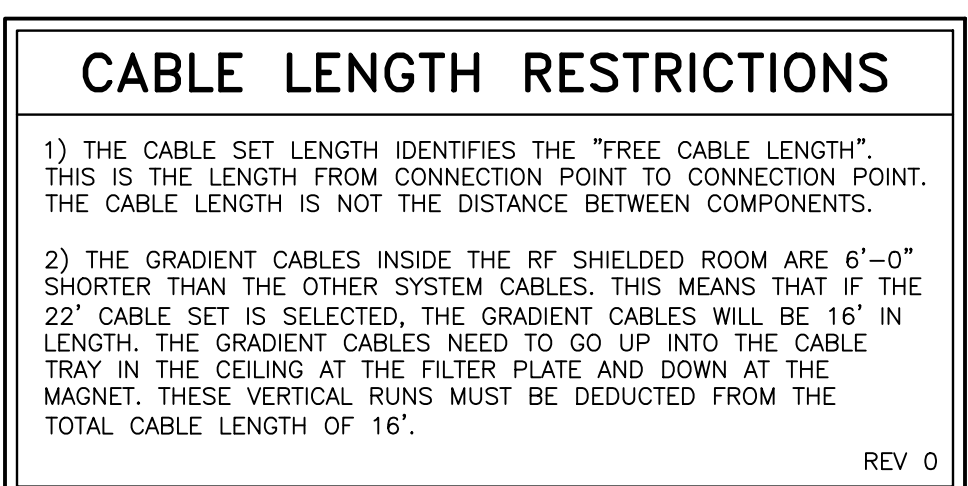
2 **CABLE SEPARATION** SCALE: NONE REV 0



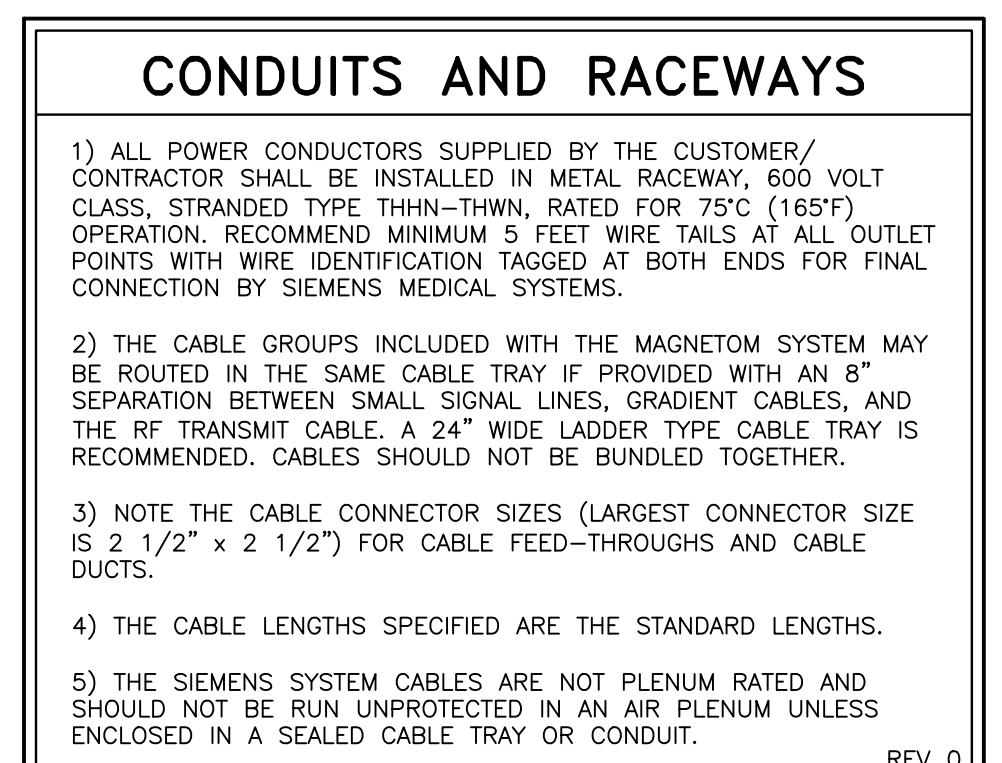
3 **SIEMENS REMOTE SERVICE** SCALE: NONE REV 0



3 **MRXPERION MRI CONTRAST INJECTOR** SCALE: NONE REV 1



REV 0



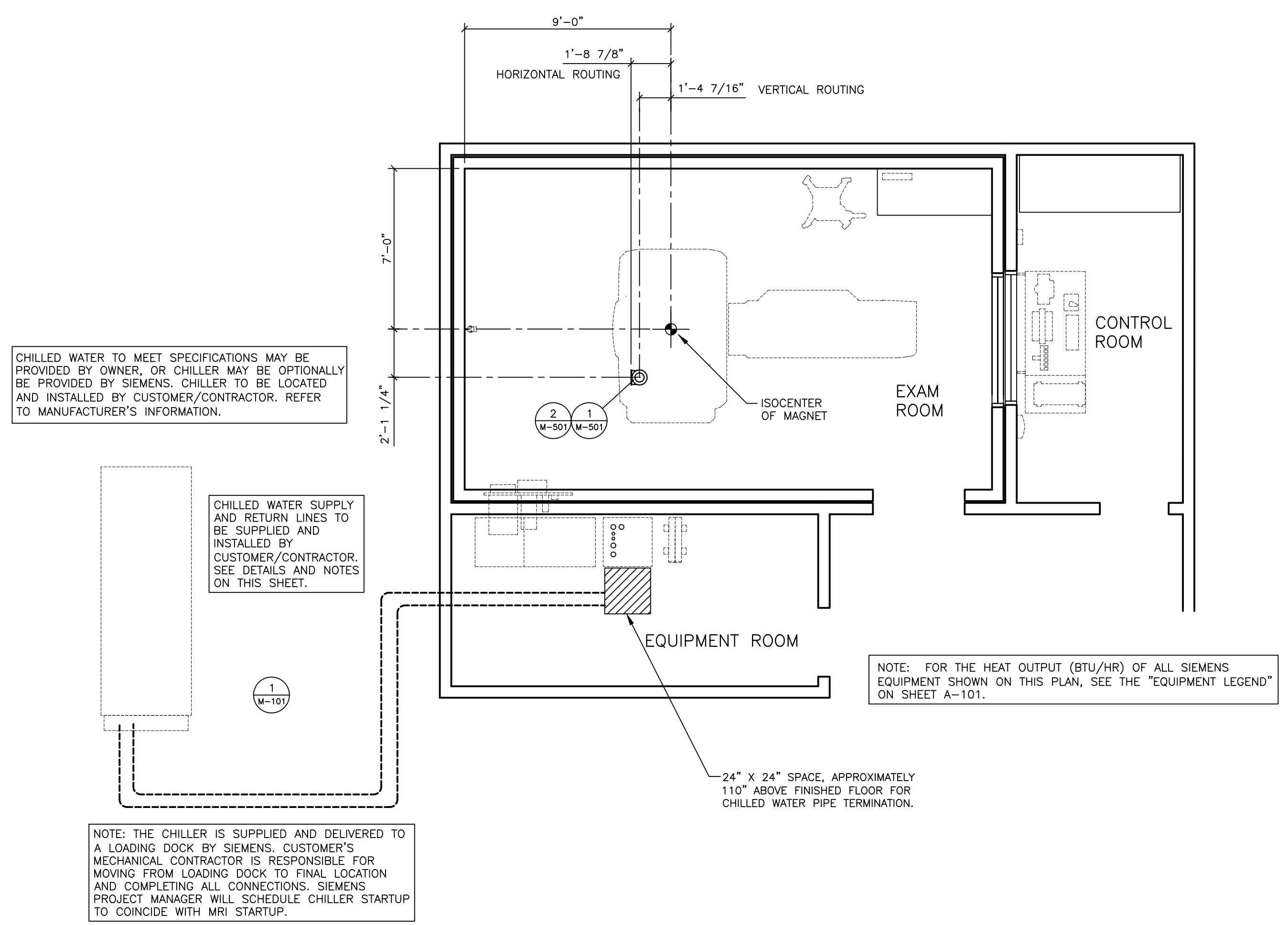
REV 0

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		PROJECT #:	SHEET:
		17058	E-501
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.	SHEET 8 OF 10	DRAWN BY: B. HERRMANN
SCALE: AS NOTED	REF. #: ---	DATE: N.A.	

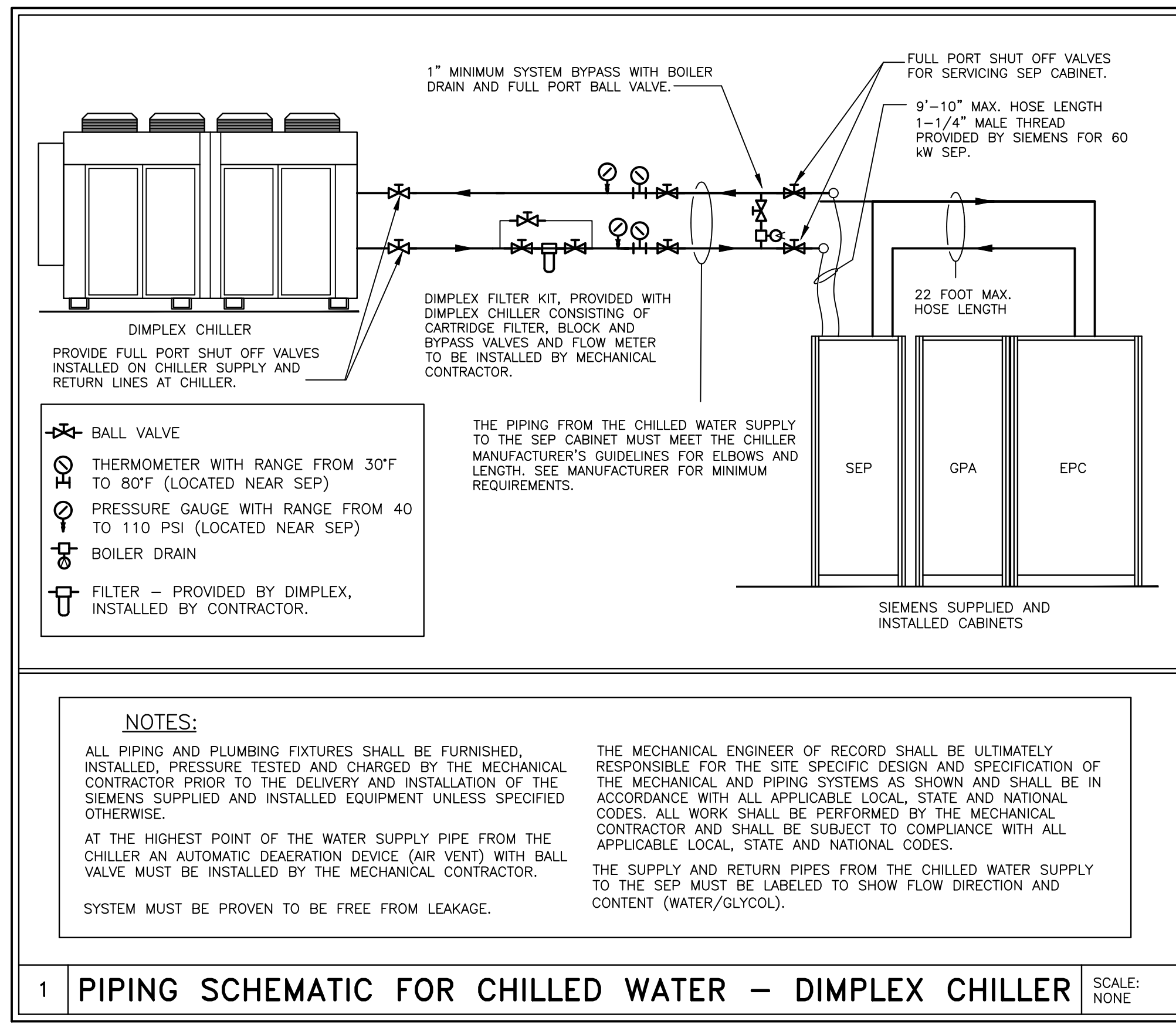
REFERENCE DOCUMENT - NOT FOR CONSTRUCTION



MECHANICAL PLAN

ENVIRONMENTAL REQUIREMENTS

- AIR CONDITIONING IS TO PROVIDE A TEMPERATURE OF 70°F ±5°F IN THE EXAM ROOM, 70°F±10°F IN THE EQUIPMENT & CONTROL AREAS. RELATIVE HUMIDITY OF 40-60% (NON-CONDENSING) IS REQUIRED EXAMINATION ROOM AND 40-80% (NON-CONDENSING) IN ALL OTHER AREAS WHERE SIEMENS EQUIPMENT IS INSTALLED. THESE CONDITIONS ARE TO BE MET AT ALL TIMES; 24 HOURS A DAY, 7 DAYS A WEEK.
- A DEDICATED AIR CONDITIONING AND HUMIDIFICATION SYSTEM IS RECOMMENDED FOR THE EXAM ROOM. A MINIMUM AIR EXCHANGE RATE OF 6 TIMES PER HOUR FOR THE EXAM ROOM IS REQUIRED. IT IS RECOMMENDED TO INSTALL A FRESH AIR SYSTEM WITH 30%-50% FRESH AIR INTAKE. AIR SUPPLY AND RETURN ABOVE THE FINISHED CEILING IN THE EXAM ROOM IS RECOMMENDED. EACH ROOM SHOULD HAVE A DEDICATED CONTROL AND SENSOR TO MONITOR AND ADJUST THE AIR.
- THE HEAT INTO THE EXAM ROOM IS LESS THAN 10,236 BTU/HR. THE HEAT INTO THE EQUIPMENT ROOM IS LESS THAN 3,412 BTU/HR. THIS HEAT DISSIPATION IS FROM THE SIEMENS EQUIPMENT ONLY. AUXILIARY SUPPORT EQUIPMENT (ie. UPS) AND LIGHTING MUST BE CONSIDERED FOR TOTAL HEAT LOADS.
- IT IS IMPORTANT FOR FRESH AIR INTAKE SYSTEMS TO EXHAUST AIR DIRECTLY OUT OF THE BUILDING. THE EXHAUST AIR MUST NOT BE DEFLECTED INTO ANOTHER ROOM. THE MAGNET ROOM EXHAUST AIR SHOULD BE INSTALLED AT LEAST 6'-6" ABOVE FINISHED FLOOR.
- THE AIR INTAKE OF THE AIR CONDITIONING SYSTEM MUST NOT BE LOCATED IN THE VICINITY OF THE QUENCH VENT EXHAUST.
- IF THE INPUT DRAWS UPON AIR FROM OUTSIDE THE BUILDING, IT IS RECOMMENDED TO INSTALL AN ON-SITE FILTER TO REMOVE DUST PARTICLES GREATER THAN 10 MICRONS.
- DO NOT LOCATE ANY HVAC DIFFUSERS ABOVE THE MAGNET. THERE SHALL NOT BE AIR BLOWING DIRECTLY ON THE MAGNET. 12/11/12



CHILLED WATER SUPPLY

A CHILLED WATER SUPPLY IS REQUIRED TO THE MRI SYSTEM 24 HOURS A DAY, YEAR ROUND FOR THE COLD HEAD AND GRADIENT SYSTEMS. THIS CAN BE PROVIDED BY A CENTRAL CHILLED WATER SUPPLY OR A SEPARATE STAND ALONE CHILLER THAT MEETS THE STATED REQUIREMENTS. CHILLED WATER CAN ALSO BE SUPPLIED BY A CHILLER PROVIDED BY SIEMENS.

A SEPARATOR CABINET (SEP) OR INTERFACE PANEL (IFP) MUST BE INCLUDED WITH THE SIEMENS ORDER. THE PIPE SIZE BETWEEN THE WATER SUPPLY AND SEP MUST MEET MANUFACTURER AND SIEMENS REQUIREMENTS. LARGER DIAMETER PIPE MAY BE REQUIRED DUE TO LENGTH OF RUN. FLOW AND PRESSURE REQUIREMENTS MUST BE MET.

27 GALLONS OF DISTILLED/DE-IONIZED WATER MUST BE PROVIDED AND INSTALLED BY CUSTOMER/CONTRACTOR FOR FILLING THE SECONDARY CHILLED WATER CIRCUIT.

SEE MANUFACTURER'S REQUIREMENTS FOR GLYCOL AND WATER QUALITY TO BE PROVIDED AND FILLED BY CUSTOMER/CONTRACTOR.

THE SUPPLY AND RETURN CHILLED WATER PIPES MUST BE LABELED. THE LOCATION OF THE LABELS MUST BE AT ALL CONNECTION AND REFILLING POINTS AND MUST CONTAIN FLOW DIRECTION AND CONTENTS.

11/06/18

CHILLED WATER REQUIREMENTS

WATER REQUIREMENTS TO BE MEASURED AT THE SEP CABINET.

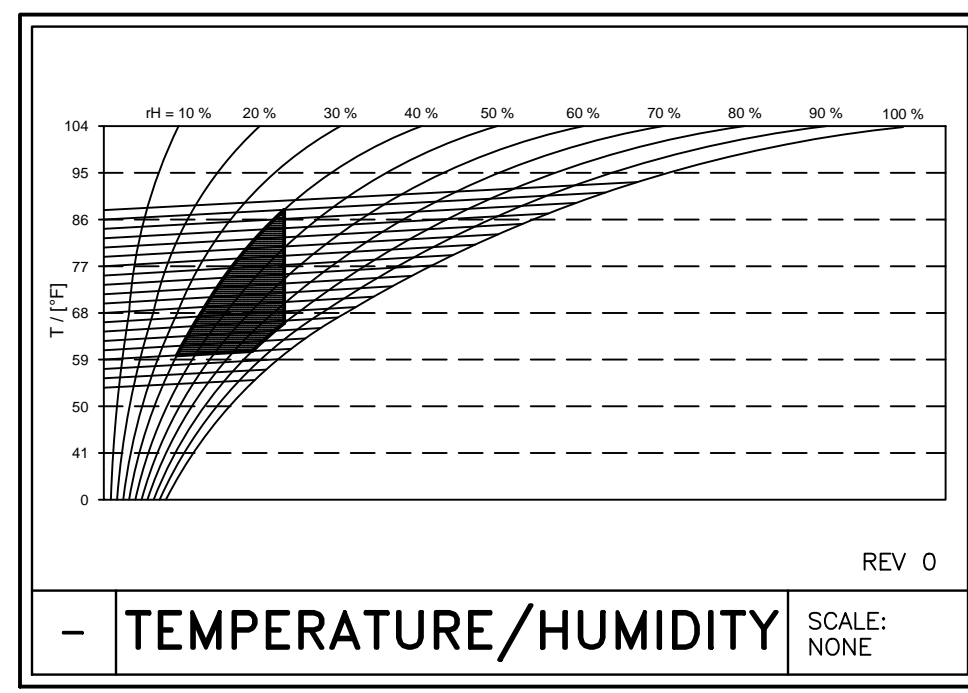
FLOW RATE:	23.78-29.05 GPM
WATER TEMPERATURE:	42.8°F - 53.6°F
BTU DISCHARGE TO THE WATER	204,911 BTU/HR
WATER PRESSURE	MAXIMUM 87 PSI
LOSS OF PRESSURE FOR SEP CABINET	<14.5 PSI 11.6 TYPICAL
CHILLED WATER ACIDITY RANGE	6 pH TO 8 pH
CHILLED WATER HARDNESS	<250 ppm CALCIUM CARBONATE
CHLORINE GAS CONCENTRATION	<200 ppm
FILTRATION	500 µm

FOR INSTALLATION OF A DIMPLEX CHILLER, IT IS THE RESPONSIBILITY OF THE CUSTOMER/MECHANICAL CONTRACTOR TO PROVIDE A MIXTURE OF WATER WITH 40% ETHYLENE GLYCOL OR 50% PROPYLENE GLYCOL PRIOR TO CHILLER START UP. DO NOT USE AUTOMOTIVE ANTI-FREEZE.

DO NOT MIX DIFFERENT BRANDS OF GLYCOL.

DIMPLEX CHILLERS USE 70-100 GALLONS PLUS THE PIPE LENGTH.

CONTRACTOR TO PROVIDE 65-95 GALLONS OF DE-MINERALIZED WATER. DO NOT USE TAP WATER.



CEILING HEIGHTS

EXAM ROOM 7'-11" MINIMUM
 CONTROL ROOM 6'-11" MINIMUM
 EQUIPMENT ROOM 7'-3" MINIMUM

MECHANICAL NOTES

- THE AIR H.V.A.C. SYSTEM MUST OPERATE FOR A MINIMUM OF 48 CONSECUTIVE HOURS PRIOR TO THE DELIVERY OF THE EQUIPMENT.
- THE FILTERS MUST BE CHANGED IMMEDIATELY PRIOR TO THE DELIVERY OF THE EQUIPMENT.
- SIEMENS REQUIRES THE USE OF A DEDICATED H.V.A.C. SYSTEM FOR THE EQUIPMENT ROOM TO BE LOCATED, SIZED AND SPECIFIED BY THE MECHANICAL ENGINEER OF RECORD AND TO BE SUPPLIED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- SIEMENS RECOMMENDS THAT THE CUSTOMER PROVIDE AND INSTALL AN OXYGEN MONITORING SYSTEM WITH VISUAL AND AUDIBLE ALARMS TO INDICATE WHEN THE OXYGEN CONTAINED IN AMBIENT AIR FALLS BELOW PRE-PROGRAMMED SAFETY LEVELS WITH THE SENSOR TO BE LOCATED IN THE SCAN ROOM IN THE AREA DESIGNATED FOR CRYOGEN FILLING.
- THE SIEMENS ACTIVE SHIELDED MAGNET RECIRCULATES LIQUID HELIUM, ELIMINATING THE NEED FOR A DEDICATED CRYOGEN STORAGE AREA. THE RECIRCULATING SYSTEM SIGNIFICANTLY REDUCES THE HELIUM "BOIL OFF". THE MAGNET WILL REQUIRE OCCASIONAL FILLING. A DELIVERY ROUTE FOR CRYOGEN DEWARS MUST BE ESTABLISHED. A MINIMUM 36" CLEARANCE IS REQUIRED.

REV 0

FIRE CONTROL NOTES

- SIEMENS HAS NO SPECIFIC REQUIREMENT FOR FIRE PROTECTION. FIRE PROTECTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH LOCAL CODES AND CUSTOMER'S INSURANCE REQUIREMENTS. ALL FIRE PROTECTION SYSTEMS SHALL BE DEFINED BY THE ARCHITECT OF RECORD WITH DESIGN, SPECIFICATION AND DETAILING OF THE FIRE PROTECTION SYSTEM BY THE MECHANICAL ENGINEER OF RECORD IN ACCORDANCE WITH SIEMENS GUIDELINES AS STATED HEREIN. THE ELECTRONIC EQUIPMENT OF THE MR SYSTEMS WILL BE DAMAGED BY WATER. REDUCTION OR ELIMINATION OF WATER USED FOR FIRE SUPPRESSION WILL REDUCE POTENTIAL WATER DAMAGE. PRE-INSTALLATION INERT GAS, OR HALOCARBONS OR OTHER METHODS CAN REDUCE OR ELIMINATE WATER. REFER TO YOUR FIRE PROTECTION PROFESSIONAL.
- THE USE OF SMOKE DETECTORS INSIDE OF THE MR EXAMINATION ROOM IS NOT RECOMMENDED. SMOKE DETECTORS, BY DESIGN, CAN GENERATE NOISE THAT MAY INTERFERE WITH THE MRI EXAMINATION AND CAUSE IMAGE ARTIFACTS. IF THE USE OF A SMOKE DETECTOR IN THE EXAMINATION ROOM IS MANDATED BY LOCAL REQUIREMENTS, SPECIAL NOISE TESTS MUST BE PERFORMED BY SIEMENS SERVICE AFTER THE MRI IS OPERATIONAL. MRI EQUIPMENT PERFORMANCE PROBLEMS DUE TO SMOKE DETECTORS ARE THE RESPONSIBILITY OF THE CUSTOMER AND ARE NOT COVERED UNDER WARRANTY OR SERVICE AGREEMENT.
- ALL MATERIAL USED INSIDE THE MAGNET ROOM SHALL BE NON-MAGNETIC. SEE CONSTRUCTION REQUIREMENTS.
- ALL PENETRATIONS IN THE RF CABIN/SHIELD SHALL BE THROUGH A WAVE GUIDE TO BE EQUIPPED WITH A DIELECTRIC COUPLER ON BOTH ENDS OF THE WAVE GUIDE. ALL WAVE GUIDES SHALL BE DESIGNED, DETAILED AND SPECIFIED BY THE RF CABIN/SHIELD CONTRACTOR WITH ALL LOCATIONS TO BE DETERMINED BY THE ARCHITECT AND MECHANICAL ENGINEER OF RECORD TO BE ESTABLISHED IN A PRE-PLANNING MEETING PRIOR TO THE DESIGN, SPECIFICATION, AND FABRICATION OF THE RF CABIN/SHIELD.
- EACH ELECTRICAL PENETRATION OF THE RF CABIN/SHIELD FOR ELECTRICAL SERVICING OF THE FIRE PROTECTION SYSTEM SHALL BE THROUGH AN RF FILTER TO BE SUPPLIED BY THE RF SHIELD CONTRACTOR WITH FILTER LOCATIONS TO BE DETERMINED BY THE ARCHITECT AND THE ELECTRICAL ENGINEER OF RECORD TO BE ESTABLISHED IN A PRE-PLANNING MEETING PRIOR TO THE DESIGN, SPECIFICATION AND FABRICATION OF THE RF CABIN/SHIELD.
- IT IS PERMISSIBLE TO RUN "BLACK PIPE" UP TO THE DIELECTRIC COUPLER ON THE OUTSIDE OF THE RF SHIELD.
- THERE MUST BE NO GROUND CONNECTIONS MADE DURING THE INSTALLATION OF EITHER THE PIPING OR ELECTRICAL FOR THE FIRE PROTECTION SYSTEM.
- THE USE OF HALON IS NOT ACCEPTABLE.
- THE LOCATION OF FIRE CONTROL SYSTEM COMPONENTS SHALL BE COORDINATED THROUGH THE ARCHITECT OF RECORD WITH ALL LOCATIONS TO BE COORDINATED WITH SIEMENS EQUIPMENT LOCATIONS AS SHOWN ON THE 1/4" SCALE EQUIPMENT LOCATION PLAN.
- THE FIRE CONTROL CONTRACTOR SHALL VERIFY EQUIPMENT MOUNTING PROCEDURES AND LOCATIONS ON ANY WALLS CONTAINING RF SHIELDING WITH THE SIEMENS PROJECT MANAGER PRIOR TO THE COMMENCEMENT OF WORK.

REV 1

COMPRESSOR LINE INSULATION

COMPRESSOR LINES RUNNING FROM THE COMPRESSOR (OR SEP CABINET) TO THE MAGNET ARE INSULATED BY SIEMENS. ADDITIONAL INSULATION (ARMAFLEX OR EQUIVALENT) FOR NOISE REDUCTION (CHIRPING) MAY BE REQUIRED. ADDITIONAL INSULATION NOT PROVIDED BY SIEMENS.

REV 0

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SYM	DATE	DESCRIPTION
△	N.A.	TYPICAL REV 1
- ISSUE BLOCK -		

SIEMENS

MAGNETOM AERA

XQ GRADIENTS
TYPICAL FINAL DRAWING SET

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PROJECT #: **17058**

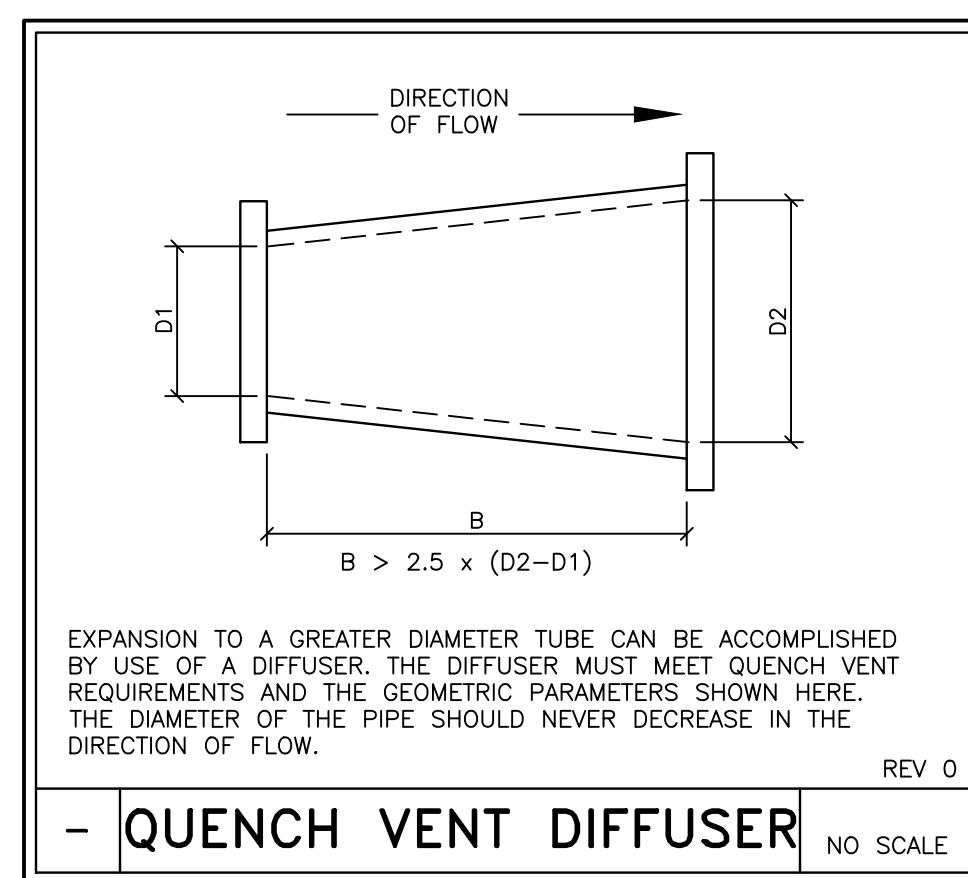
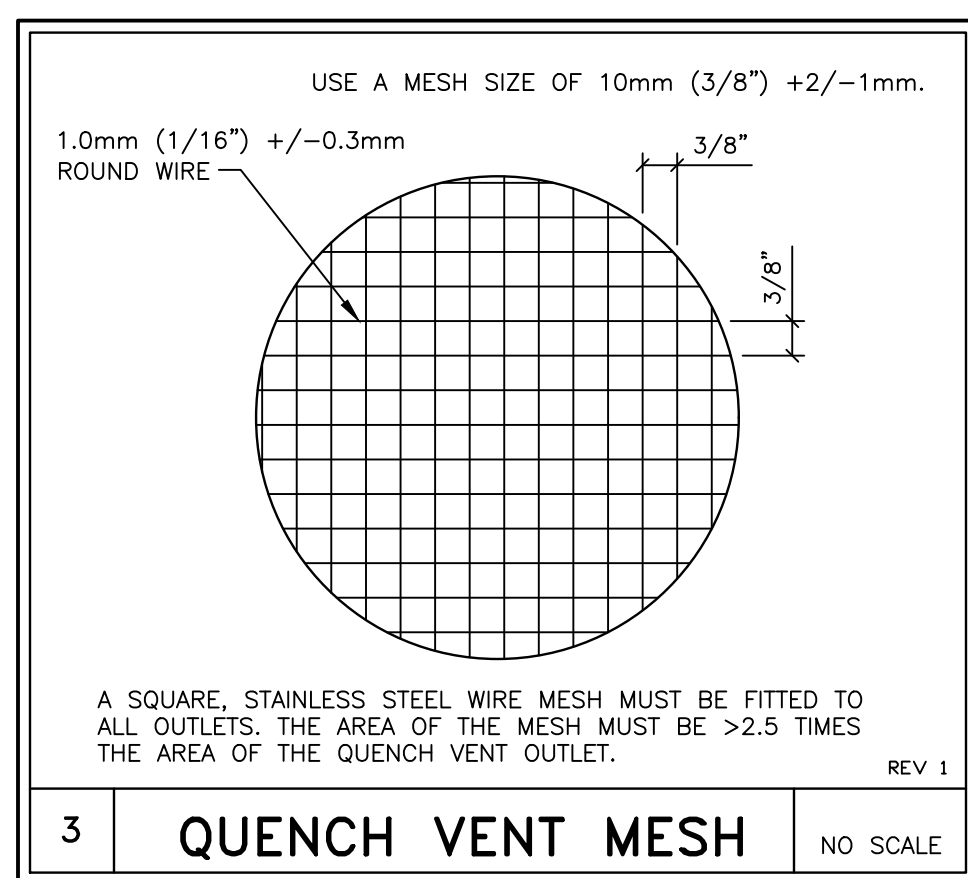
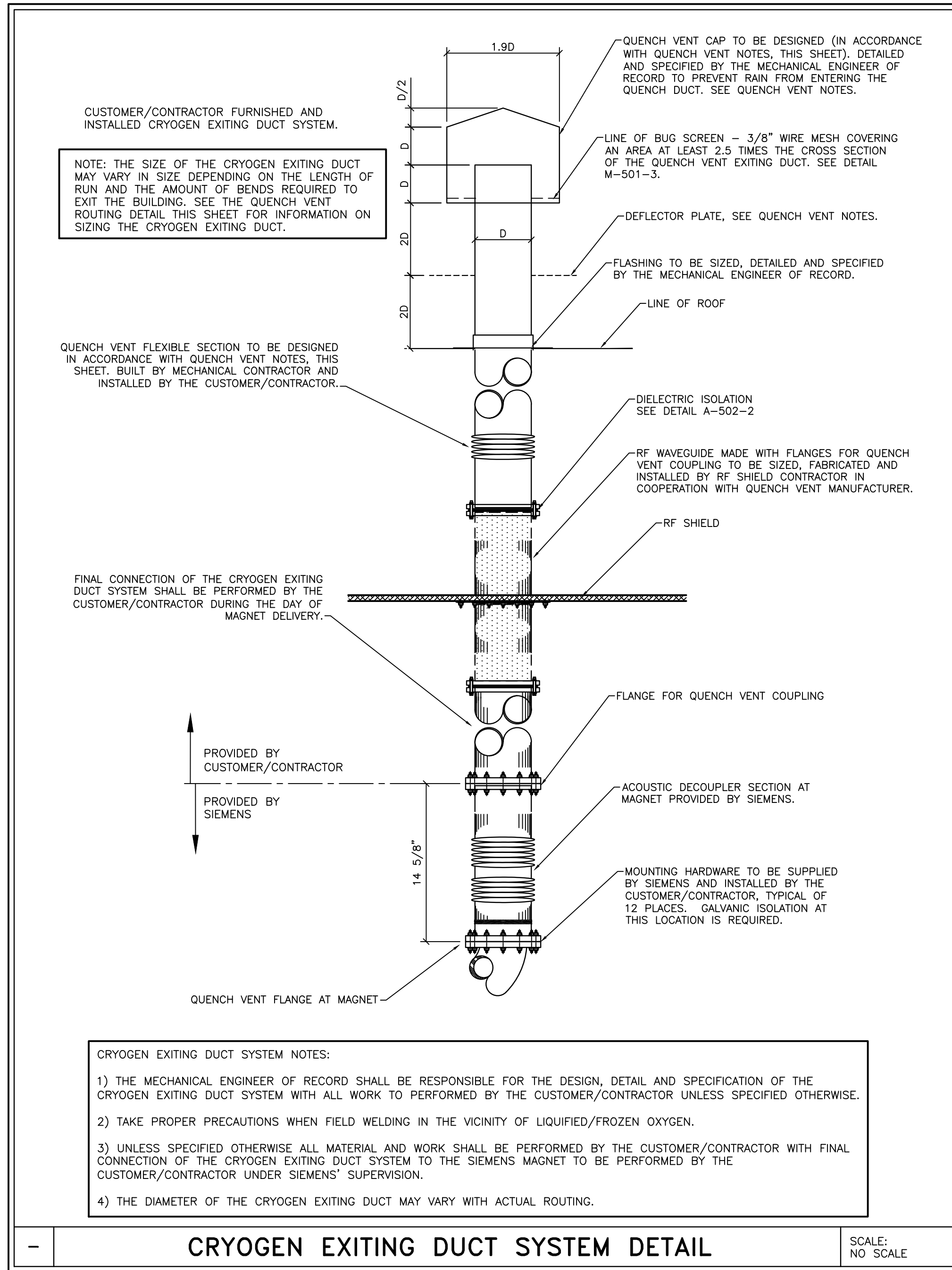
SHEET: **M-101**

DATE: 9 OF 10

DRAWN BY: B. HERRMANN

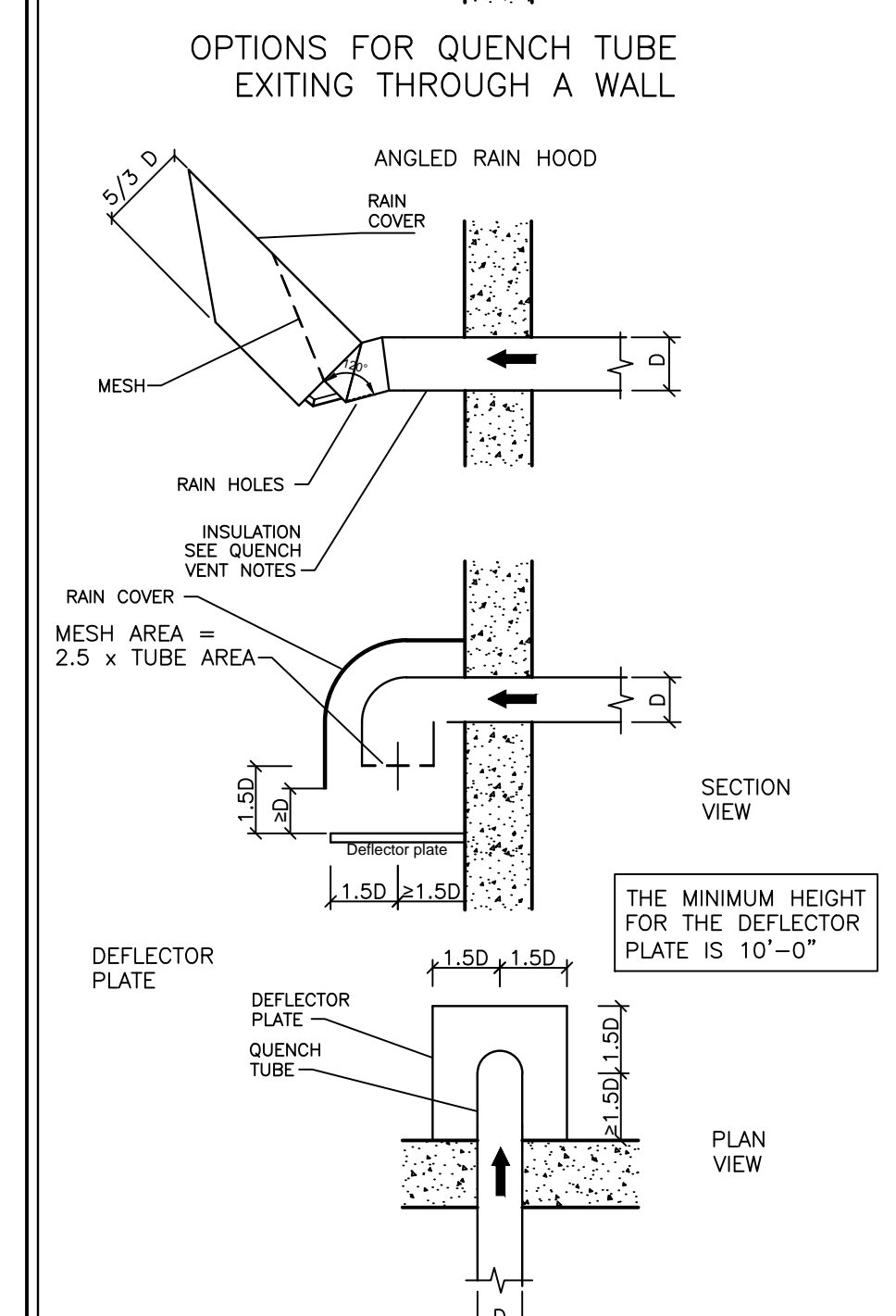
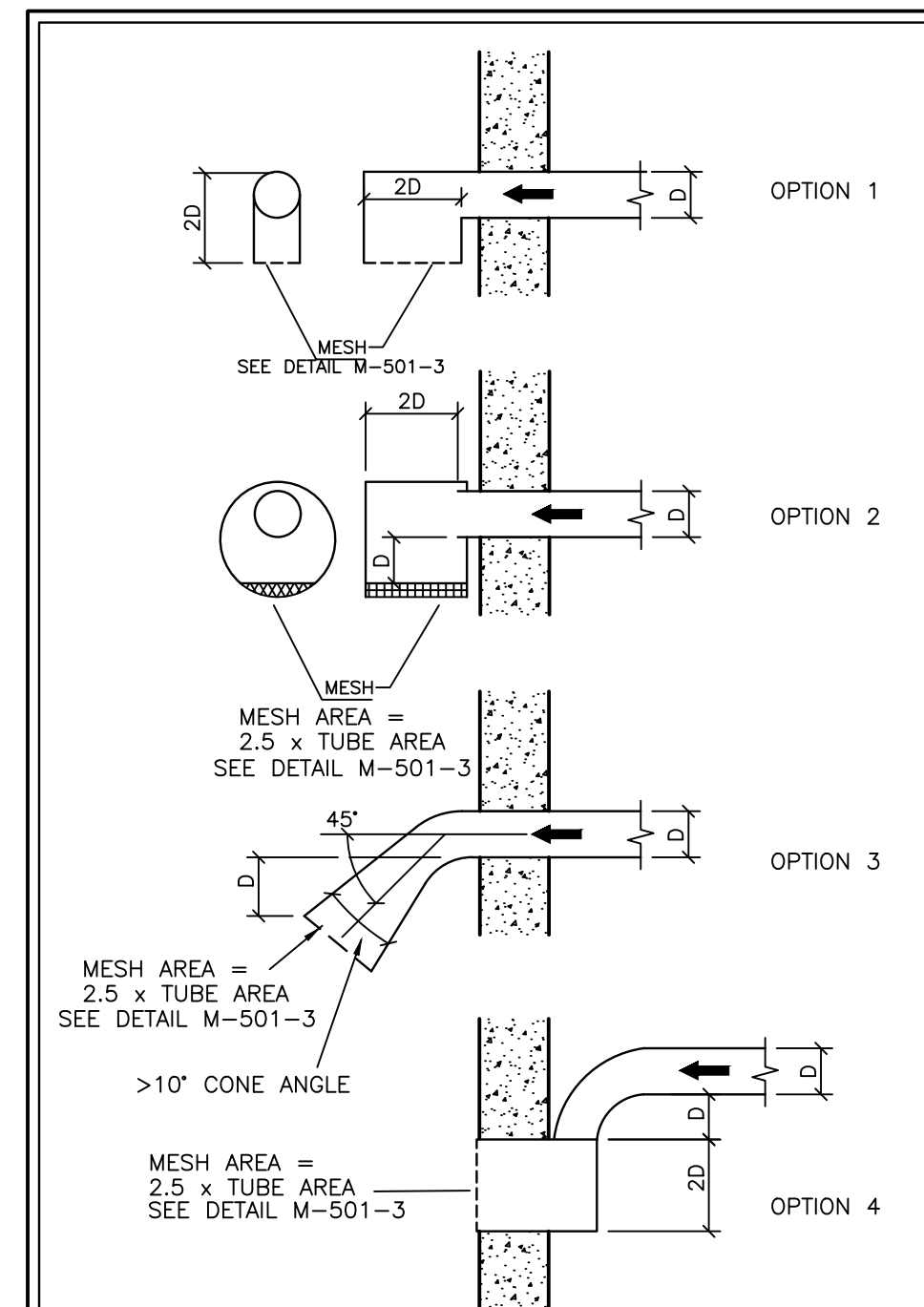
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CRYOGEN NOTES

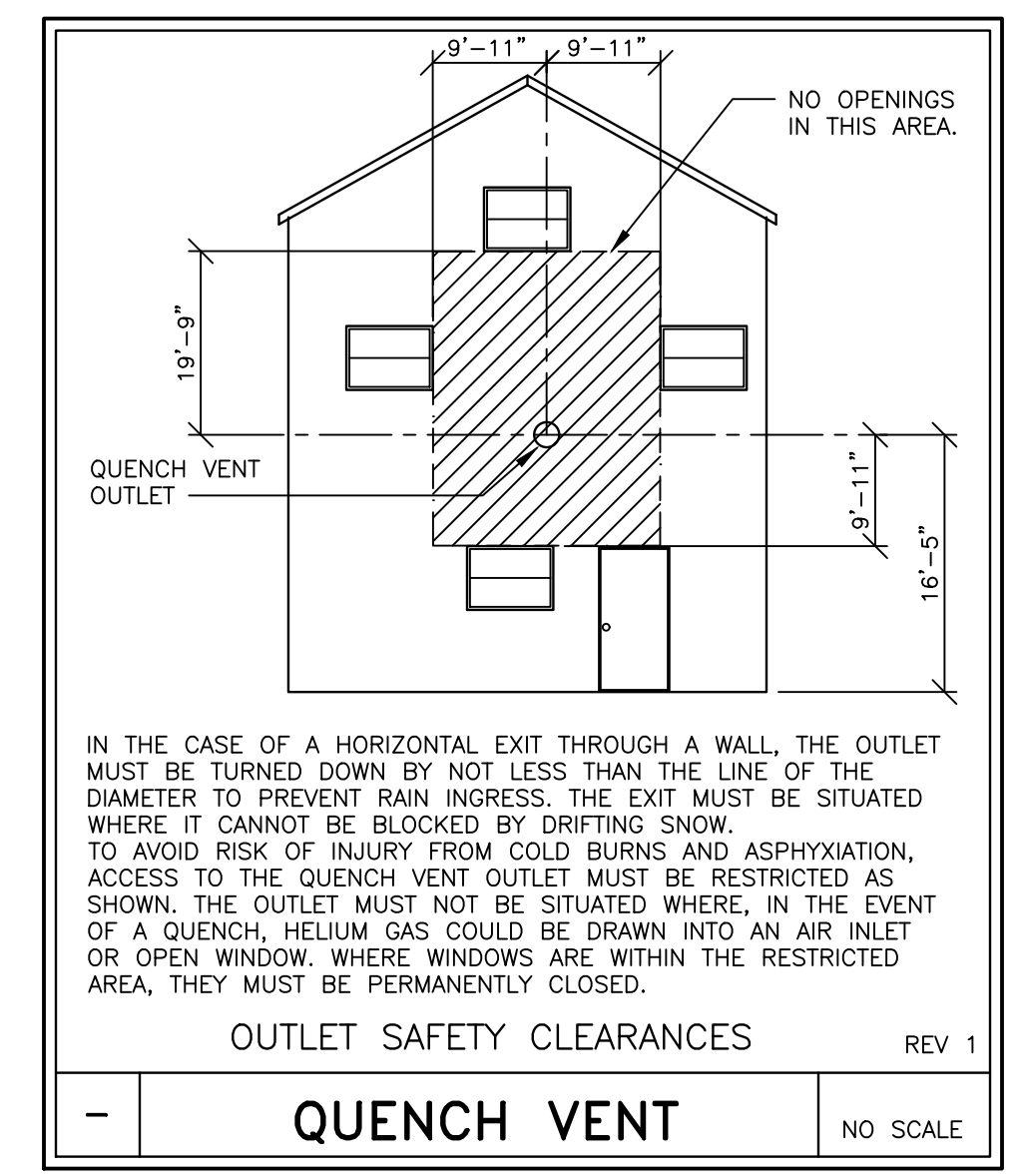
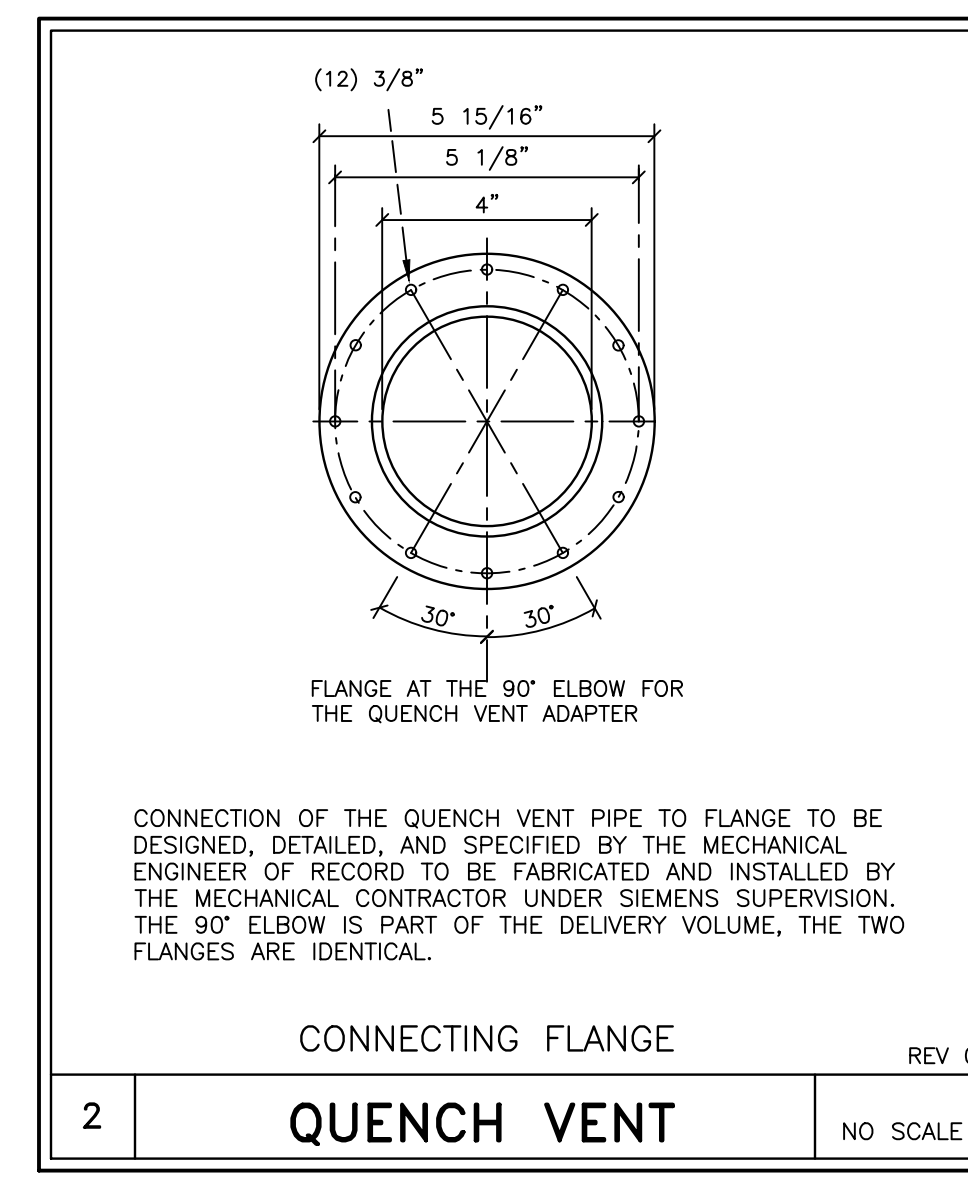
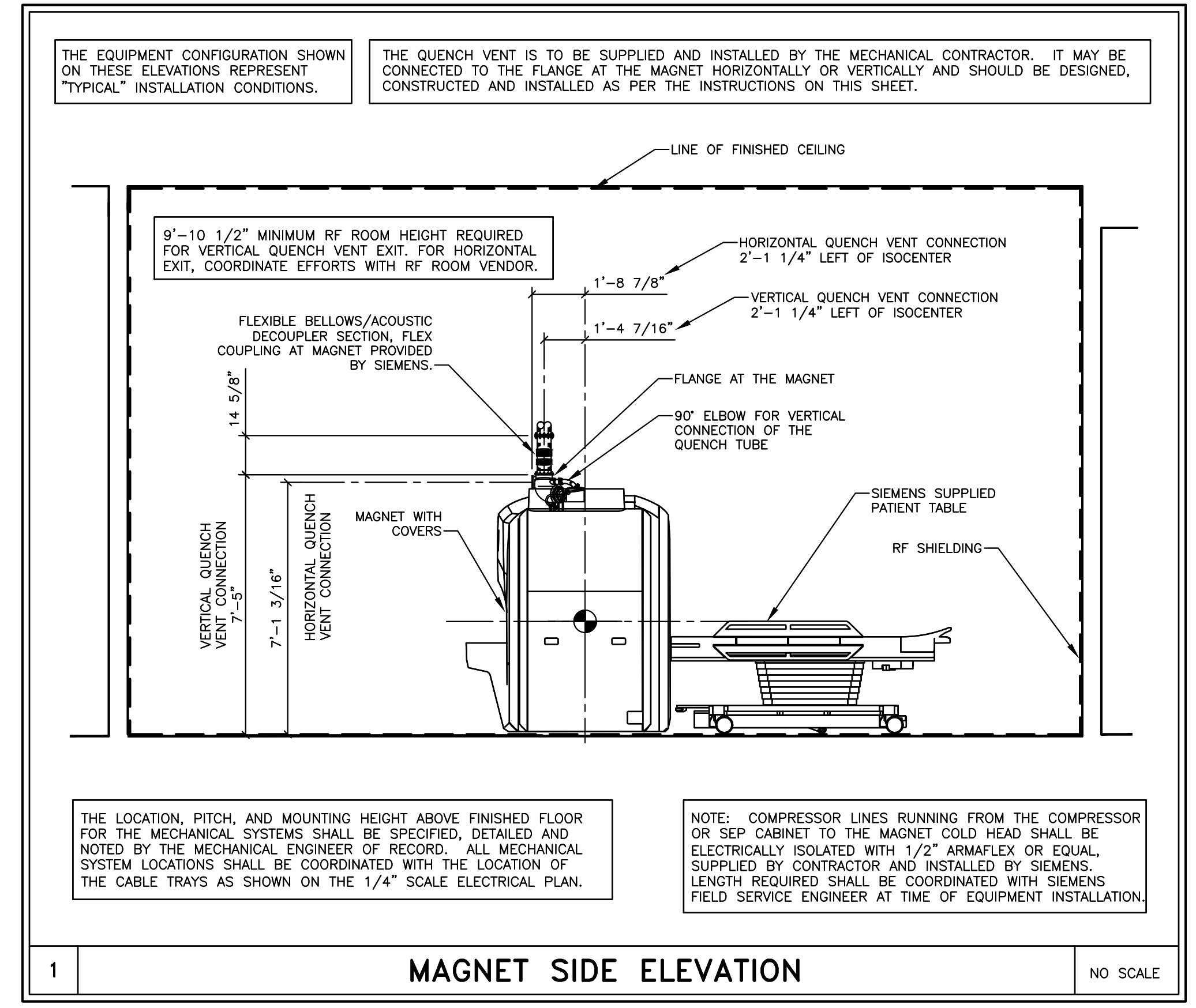
- "CRYOGENS" IS A TERM USED TO IDENTIFY THE REFRIGERANT USED TO MAKE THE MAGNET "SUPER-CONDUCTING". IN THIS APPLICATION, LIQUID AND GASEOUS HELIUM. SPECIAL CARE MUST BE TAKEN DURING THE TRANSFILLING OF THE MAGNET WITH CRYOGENS AND NORMAL EXHAUST OF CRYOGENS FROM THE SYSTEM, ASIDE FROM THE OBVIOUS DANGER OF FREEZING, HELIUM GAS WILL ALSO DISPLACE THE OXYGEN IN THE ROOM. THE INSTALLATION OF AN APPROVED TOXGARD MONITORING SYSTEM IS RECOMMENDED.
- THERE SHALL BE A TRANSPORT ROUTE FOR DELIVERY OF CRYOGENS TO THE EXAM ROOM. SPECIAL VESSELS CALLED DEWARs ARE USED TO TRANSPORT HELIUM. A 250 LITER DEWAR WEIGHS 335 POUNDS AND HAS A 32" DIAMETER, A 500 LITER IS 540 POUNDS, AND IS 42" IN DIAMETER.
- HELIUM GAS CYLINDERS MAY BE USED DURING THE INITIAL FILLING OF HELIUM INTO THE MAGNET. THE FACILITY IN WHICH THESE MAY BE USED NEEDS TO HAVE THE ABILITY TO TEMPORARILY STORE AND SECURE THESE CYLINDERS THAT WILL PREVENT THEM FROM INADVERTENTLY FALLING OVER.
- OUTSIDE VENTING OF THE HELIUM IS TO BE PROVIDED BY MEANS OF A VENT PIPE OF NON-MAGNETIC MATERIAL CALLED A QUENCH VENT. REV 0



QUENCH VENT NOTES

QUENCH VENT DESIGN INSTRUCTIONS

- IN THE EVENT OF A QUENCH, THE THERMAL ENERGY DISSIPATED CAUSES AN EXTREMELY RAPID BOIL OFF OF THE LIQUID HELIUM. THE SYSTEM MUST BE CAPABLE OF VENTING THE LARGE VOLUME OF GAS GENERATED AT THE APPROXIMATE EXPANSION RATIO OF 1:700 FROM LIQUID AT 4.2K TO ROOM TEMPERATURE GAS. THE EXHAUST SYSTEM IS CRITICAL FOR THE SAFE OPERATION OF THE MAGNET. THE DATA IN THIS DOCUMENT MUST BE FOLLOWED. SINCE HELIUM VENTED IN A QUENCH IS AN ASPHYXIANT & EXTREMELY COLD, THE QUENCH TUBE MUST ALWAYS END AT A POINT WHERE ACCESS BY PEOPLE IS NOT POSSIBLE. QUENCH TUBE PLANNING MUST ONLY BE DONE BY QUALIFIED PERSONNEL. IT IS THE OWNER'S RESPONSIBILITY TO ENSURE THAT THE QUENCH TUBE IS MAINTAINED IN AN OPERABLE STATE.
- IF THE QUENCH VENT IS NOT CONFIGURED CORRECTLY THERE IS A RISK OF DANGER THAT MAY LEAD TO DEATH OR SERIOUS INJURY AND CAN RESULT IN STRUCTURAL DAMAGE. THE EXHAUST MUST NOT BE VENTED IN AN ENCLOSED SPACE. THE OPERATOR OF THE SYSTEM MUST PREPARE AN EMERGENCY PLAN IN THE EVENT OF A QUENCH.
- THE QUENCH TUBE CONSISTS OF STRAIGHT, HYDRAULICALLY SMOOTH SECTIONS, BENDS UP TO 90° AND A DIFFUSER, IF REQUIRED. THE END OF THE TUBE MUST BE PROTECTED FROM RAIN, SNOW, AND FOREIGN OBJECTS. ROUND SECTIONS ONLY. NO SQUARE SECTIONS.
- THE SIEMENS MAGNET HAS A QUENCH VALVE ASSEMBLY FOR CONNECTION TO THE TUBE LOCATED AT THE TOP LEFT SIDE OF THE MAGNET (SEE MAGNET ELEVATION). THE MECHANICAL CONTRACTOR WILL SUPPLY AND INSTALL A QUENCH VENT TUBE WITH CAP, TO BE NON-MAGNETIC STAINLESS STEEL (≥22 GAUGE RECOMMENDED). GRADES AISI304, 309, 316, OR 321 ONLY. THERMAL CONDITIONS MAY CAUSE THE TUBE TO CONTRACT UP TO 3mm/METER SO A STAINLESS STEEL BELLOWS OR FLEXIBLE SECTION MUST BE INSTALLED A MINIMUM OF EVERY 32'-0" NOT TO EXCEED 2% OF THE OVERALL LENGTH. THE QUENCH TUBE MAY ALSO BE MADE OF ALUMINUM. EXTRUDED TUBE ALUMINUM GRADES 6063 AND 6082 ONLY MUST BE USED. ROLLED AND WELDED TUBE FROM SHEET ALUMINUM GRADE 5083 ONLY MUST BE USED. THE WALL SECTIONS OF ALUMINUM TUBE MUST BE A MINIMUM 14 GAUGE. THERMAL CONTRACTION OF 4.5 MM/METER MUST BE CONSIDERED FOR ALUMINUM QUENCH TUBES. THE MOVEMENT OF THE BELLOWS MUST BE RESTRICTED TO PREVENT EXCESSIVE EXPANSION DUE TO PRESSURE. THE WEIGHT OF THE TUBE MUST BE SUPPORTED BY THE BUILDING AND BE FLEXIBLE ENOUGH TO ALLOW MOVEMENT FROM THERMAL CONTRACTION. THE WALL EXIT SHOULD ALSO BE FLEXIBLE.
- PRESSURE CALCULATION**
5) THE MAXIMUM INTERNAL PRESSURE IS CALCULATED AT 1.45 PSI. THE MAXIMUM PRESSURE SHOULD BE ENGINEERED FOR 6.5 PSI.
- USE THE QUENCH VENT CALCULATOR PROVIDED BY SIEMENS TO DESIGN A QUENCH VENT THAT MEETS DESIGN REQUIREMENTS FOR DIAMETER, LENGTH, NUMBER OF ELBOWS AND PRESSURE DROP. ALL BENDS MUST BE SMOOTH WALLED AND HAVE A CENTERLINE TO INTERNAL PIPE DIAMETER RATIO OF 1.5 TO 5.0. EXPANSIONS TO PIPE DIAMETER CAN BE DONE WITH A DIFFUSER. ONLY ROUND TUBE SECTIONS MAY BE USED. RECTANGULAR SECTIONS ARE NOT ALLOWED.
- THERE MUST BE A 12"-19 INCH FLEXIBLE SECTION OF PIPE FOR CONNECTION TO THE QUENCH VALVE. THE MAGNET WITH AN INSIDE DIAMETER GREATER THAN 4" (1.5T) OR 6" (3.0T) AND ABLE TO WITHSTAND 6.5 PSI.
- CONNECTING SECTIONS**
8) SECTIONS OF THE PIPE CAN ONLY BE JOINED BY WELDING OR BOLTED FLANGES WITH FIBER GASKETS. ROTARY FLANGES ARE PERMITTED. VEE CLAMPED FLANGES MAY NOT BE USED.
- QUENCH VENT EXIT**
9) THE PROTECTION AT THE END OF THE TUBE SHALL BE 3/8" WIRE MESH WITH 1/16 INCH WIRES, COVERING AN AREA AT LEAST 2.5 TIMES THE CROSS SECTION AREA OF THE QUENCH PIPE.
- WHERE THE QUENCH TUBE EXITS THROUGH A FLAT ROOF, THE THE OUTLET MUST BE ABOVE A LEVEL WHERE WATER COULD ENTER IN THE EVENT THAT THE ROOF DRAINS BECOME BLOCKED. IN THE CASE OF A HORIZONTAL EXIT THROUGH A WALL, THE OUTLET SHALL BE ANGLED DOWNWARD NOT LESS THAN 30 DEGREES TO PREVENT RAIN INGRESS. THE EXIT SHALL BE LOCATED ABOVE THE LEVEL OF DRIFTING SNOW.
- WHERE THE QUENCH TUBE EXITS VERTICALLY, A RAIN COVER MUST ALSO BE FITTED WITH THE DIAMETER TO BE TWO TIMES THE DIAMETER OF THE QUENCH TUBE. THE CLEARANCE BETWEEN THE RAIN GUARD AND THE MESH SHALL BE AT LEAST 3 TIMES THE DIAMETER OF THE TUBE. A DEFLECTOR PLATE SHALL BE WELDED TO THE TUBE WHERE IT EXITS THE ROOF TO PREVENT HELIUM FROM RE-ENTERING THE BUILDING. THE DEFLECTOR SHALL BE AT LEAST 3 TIMES THE DIAMETER OF THE QUENCH TUBE AND LOCATED TWO PIPE DIAMETERS ABOVE THE ROOF AND TWO PIPE DIAMETERS BELOW THE RAIN GUARD.
- DURING A QUENCH THE HELIUM GAS EXITING THE QUENCH PIPE MAY BE AT TEMPERATURES OF LESS THAN -400°F. DUE TO THIS TEMPERATURE ROOFING MATERIALS OR ITEMS AROUND THE VENT EXIT MAY BE ADVERSELY AFFECTED. CONSIDERATION OF MATERIALS AND ITEMS PLACED NEAR THE VENT EXIT SHOULD BE TAKEN INTO ACCOUNT SO DAMAGE DOES NOT OCCUR.
- WHERE THE QUENCH TUBE EXITS HORIZONTALLY, THE OUTLET MUST CONFORM TO OPTIONS 1-4 OR THE ANGLED RAIN HOOD. THE OUTLET SHOULD NOT BE LOCATED WHERE HELIUM GAS CAN BE DRAWN INTO AN AIR INLET, ENTER AN OPEN WINDOW, OR BLOW DIRECTLY ONTO STRUCTURE OR EQUIPMENT. RESTRICT ACCESS TO WINDOWS AND DOORS TO AVOID INJURY FROM COLD BURNS AND ASPHYXIATION BY 9'-11" ON EACH SIDE, BELOW AND 19'-9" ABOVE. IF THE OUTLET IS POSITIONED TOO LOW A DEFLECTOR PLATE CAN BE USED WITH OPTION 1 AND 3.
- WARNING SIGNS AND OUTLET RESTRICTIONS**
A WARNING SIGN MUST BE FIXED AND VISIBLE NEAR THE QUENCH VENT OUTLET. THE TUBE MUST HAVE A WARNING POSTED ALONG ITS ENTIRE LENGTH FOR EXTREMELY COLD HELIUM GAS - AUTHORIZED PERSONNEL ONLY.
- AREAS WITH ACCESS IN THE AREA OF THE OUTLET MUST BE CLEARLY IDENTIFIED AND FENCED, FOR EXAMPLE, A ROOF OUTLET WITH MAINTENANCE ACCESS.
- INSULATION AND GALVANIC SEPARATION**
14) THE QUENCH TUBE MUST HAVE MINIMUM 1" INSULATION FOR THE FULL LENGTH. WITHIN THE RF ROOM THERE SHALL BE A 1" LAYER OF MINERAL FIBER INSULATION WITH A VAPOR BARRIER AND 1" CLASS O OR CLASS AP ARMAFLEX. OUTDOOR PIPES MUST BE WEATHERPROOF. THE INSULATION MUST NOT TOUCH THE MAGNET COVERS. TO AVOID RF DISTURBANCES THE INSULATION MUST NOT MAKE ELECTRICAL CONTACT WITH THE WAVEGUIDE.
- GALVANIC SEPARATION MUST BE PROVIDED BETWEEN THE MAGNET, THE QUENCH VENT, THE RF ROOM AND THE BUILDING. TWO SEPARATIONS ARE REQUIRED USING STAINLESS STEEL BOLTS, INSULATING BUSHES AND LOCKING NUTS. NO OTHER DESIGNS ARE PERMITTED FOR SAFETY.
- DOCUMENTATION**
16) THE DESIGN AND CONSTRUCTION OF THE QUENCH PIPE MUST BE DOCUMENTED WITH DRAWINGS AND CALCULATIONS THAT ARE KEPT WITH INSTALLATION DOCUMENTS. IT MUST COMPLY WITH THE REQUIREMENTS IN THIS DOCUMENT BEFORE BEING CONNECTED TO THE MAGNET.



HELIUM CONTENT

LITERS AT 100%	1,280	
TYPICAL BOIL OFF RATE	0.0 L/HR	FOR TYPICAL CLINICAL USE, DEPENDING ON SEQUENCES AND OPERATING TIME.
TYPICAL REFILL INTERVAL	10 YEARS	

WITHOUT THE COLD HEAD RUNNING THE LIQUID HELIUM WILL BOIL OFF FROM 97% TO 0% IN APPROXIMATELY 30 DAYS DEPENDING ON SEQUENCES AND OPERATING TIME. THE LOSS DURING SHIPPING IS APPROXIMATELY 3.3% PER DAY.

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.

IT IS RECOMMENDED THAT THE SIEMENS DRAWINGS BE INCORPORATED WITH THE CONSTRUCTION DOCUMENTS FOR REFERENCE.

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.

SIEMENS MAGNETOM AERA

XQ GRADIENTS
TYPICAL FINAL DRAWING SET

PROJECT #: **17058**

SHEET: **M-501**

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SCALE: AS NOTED REF: # --- DATE: N.A. DRAWN BY: B. HERRMANN

SYMBOLS: N.A. TYPICAL REV 1

ISSUE BLOCK

AERA REV 30