

# Drawing Index

These sheets are a document set and should not be separated. Electrical information and references are contained on all sheets.

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These equipment IS drawings indicate the placement and interconnection of the listed equipment components. These drawings are not construction or site preparation drawings. Customer remains ultimately responsible for preparing the site to accommodate the IS and operation of such equipment in compliance with GE Healthcare's written specifications and all applicable federal, state, and/or local requirements.

**\* REQUIRED REFERENCE \***  
 Signa 1.5T HDx  
 HDxt, HDi, Vibrant  
 Pre Installation Manual  
 5159901

A mandatory component of this drawing set is the GE Healthcare Pre Installation manual. Failure to reference the preIS manual will result in incomplete documentation required for site design and preparation.

Pre Installation documents for GE Healthcare products can be accessed on the web at:

[www.gehealthcare.com/siteplanning](http://www.gehealthcare.com/siteplanning)

# GE Healthcare



## MRi Site Planning



imagination at work

## Customer Site Readiness Requirements

- Any deviation from these drawings must be communicated in writing to and reviewed by your local GE Healthcare Installation Project Manager prior to making changes.
- Make arrangements for any rigging, special handling, or facility modifications that must be made to deliver the equipment to the installation site. If desired, your local GE Healthcare Installation Project Manager can supply a reference list of rigging contractors.
- New construction requires the following; 1. Secure area for equipment, 2. Power for drills and other test equipment, 3. Capability for image analysis, 4. Restrooms.
- Provide for refuse removal and disposal (e.g. crates, cartons, packing)
- It is the customer's responsibility to contract a vibration consultant/engineer to implement site design modifications to meet the GE vibration specification. Refer to the system preinstallation manual for the vibration specification.

## GE Equipment Delivery Requirements

The items on the GE Healthcare Site Readiness Checklist are REQUIRED to facilitate equipment delivery to the IS site. Equipment will not be delivered if these requirements are not satisfied.

GE Healthcare Site Readiness Checklist							
GEHC Global Order # : _____			Customer: _____				
GEHC On-site Representative : _____			MI Supplier: _____				
Name of customer reviewed with : _____			Lead Installer: _____				
GEHC PMI : _____			Phone Number: _____				
Target Site Prep Completion Date: _____			Helper: _____				
<b>The customer is responsible for proper site preparation regardless of any GEHC measurements/inspections/assessments.</b>							
<small>For MR Magnet Delivery: Ensure cryogen vents, power for the cooling system and exhaust fan system are installed and operational (0.7T, 1.5T &amp; 3T) and chilled water supply is available 24x7 that meets system cooling equipment requirements. Broadband/phon</small>							
Item #	GEHC Minimum Requirements	Storage: Is item ready?	Prep Status (P=1, S=1)		Verify (Delivery): Is item ready?	Validate (Mech Install): Is item ready?	Comments if "N", please enter in comments or action plan
			Is this item ready?	Will item be ready?			
1	Equipment installation drawings must match actual room size, equipment placement and must meet clearance requirements. Deviations that meet installation requirements may be red-lined, if allowed by local code. Seismic requirements identified on construct.						
2	Delivery route to installation or storage area meets requirements and has been discussed and scheduled with the customer. Ensure floor protection is discussed, requirements identified, and will be available at time of delivery and installation.						
3	Rooms that will contain equipment, including storage areas, not in scan suite, are dust free. Provisions taken to maintain a dust free room. Room security to prevent unauthorized access and theft has been discussed with customer. The customer is aware of						
4	In room HVAC ductwork and units (in room) must be mechanically installed and dust free. Installation rooms appear to meet environmental conditions (see Further Definitions) and observed issues have been communicated to the customer. If being stored, sto						
5	Ceiling grid is installed. Permanent lighting is installed and operational. Unistrut (or equivalent) location and spacing was measured and is consistent with the requirements of the installation drawings.						
6	Floor is clean and prepared for final floor covering. For MR, CT & Nuc scan rooms, floor levelness was measured and does not exceed tolerances specified in GEHC's applicable PM, and no visible floor surface defects were observed.						
7	Access to a working phone at the facility for emergency use, including MR magnet delivery.						
8	All walls primed (final coat not needed on Day 1).						
9	Mechanical supplier has been provided with a set of equipment installation drawings for reference. For California, permitted construction drawings or PM-specified installation drawings are required.						
#	Conduit/electrical cable ducting/dividers/ access flooring installed, with the exception of surface-mounted floor ducting. Wiring to the main disconnect panel is installed and compliant with equipment installation drawings or pre-installation manual.						

This drawing is based on Sketch No.: 8-206

**GE Healthcare**

IS Services Design Center  
 Milwaukee, Wisconsin  
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SHEET TITLE: **SITE READINESS**  
 MODALITY TYPE: 1.5T SIGNA HDx

THIS PLAN IS SUBMITTED TO SUGGEST LOCATION OF GE HEALTHCARE EQUIPMENT AND ASSOCIATED APPARATUS, ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. IT IS THE CUSTOMER'S RESPONSIBILITY TO OBTAIN ALL NECESSARY PERMITS AND TO VERIFY THAT ALL REQUIREMENTS TO ACTUAL EQUIPMENT EXPECTED TO BE INSTALLED, INCLUDING BUT NOT LIMITED TO ACTUAL CONSTRUCTION PURPOSES, HOWEVER, AND THE COMPANY CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

PROJECT TITLE: **8-206f**  
**TYPICAL LAYOUT**

PROJECT	REVISION
8-206F	03
DATE:	11.JAN.12
DRAWN BY:	PMM
CHECKED BY:	TMS

REVISION HISTORY:


SHEET  
**C1**

GE EQUIPMENT LISTING				EQUIPMENT CROSS REFERENCE CHART			
ITEM NO.	QUANTITY ORDERED	REFER TO SHEET "D"	WEIGHT	HEAT OUTPUT (PER HOUR)	DETAIL NO.	STRC PLAN	ELEC PLAN
1	1	SHIELD COOLER CABINET	275 lbs	170 btu	M1615E M1615B	-	MSB
2	1	WATER CHILLER FOR BRM BODY COIL	295 lbs	13993 btu	M6015B	-	WC1
3	1	BLOWER BOX	46 lbs	3412 btu	M5715	MSB	MG6
4	1	RFS CABINET	899 lbs	27788 btu	M5015F	-	MR2
5	1	HFD/PDU CABINET	1805 lbs	34129 btu	M5015D	-	MR3
6	1	RF PENETRATION PANEL	88 lbs	324 btu	M5615 M5515 M4515B	-	PP1
7	2	PENETRATION PANEL COVERS	-	-	M4715B	-	S
8	1	OPERATOR WORKSPACE W/COLOR LCD MONITOR	125 lbs	4948 btu	M0516A	-	OV
9	1	OPERATOR'S CHAIR	-	-	-	-	-
10	1	OPERATOR WORKSPACE CABINET	198 lbs	-	M0615D	-	C
11	1	PATIENT ALERT CONTROL BOX	-	-	M4815	-	PA
12	1	MAGNET RUNDOWN UNIT	8 lbs	-	M1715A	-	MS4
13	1	MAGNET MONITOR	22 lbs	204 btu	M1615C	-	MM
14	1	SPT PHANTOM CABINET	350 lbs	-	M6115	-	C
15	1	1.5 TESLA LCC ACTIVE SHIELD MAGNET	12608 lbs	8191 btu	M6515 M0300A M0300B M0300C	M6515A	MS1
16	1	PATIENT TRANSPORT TABLE (DOES NOT INCLUDE PATIENT)	279 lbs	-	M2315	-	S
17	0	INJECTOR HEAD ON PEDESTAL (OPTION)	59 lbs	-	E8804S1	-	IH
18	0	CONTROL ROOM UNIT (OPTION)	15 lbs	-	E8804S	-	ICC
19	0	BATTERY CHARGING UNIT (OPTION)	4 lbs	-	E8804S	-	-
20	0	ADVANTAGE WORKSTATION WITH TWO LCD MONITORS (OPTION)	81 lbs	1109 btu	M1013AK	-	S

THE FOLLOWING ITEMS, WHICH HAVE BEEN ORDERED FROM GE HEALTHCARE, ARE TO BE INSTALLED BY THE CUSTOMER OR HIS CONTRACTOR.

60	WATER CHILLER BY OTHERS TO BE LOCATED IN FIELDS OF LESS THAN 10 GAUSS. (FINAL LOCATION TO BE DETERMINED BY OTHERS) - OR HOSPITAL CHILLED WATER SUPPLY.
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SCALE: 1/4" = 1'-0" EQUIPMENT LAYOUT RECOMMENDED CEILING HEIGHT = 8'-9"

**MRI SITE PLANNING REMINDERS**

PLEASE REFER TO PRE-INSTALLATION CHECKLIST IN PRE-INSTALLATION MANUAL LISTED ON SHEET C1 FOR ITEMS CRITICAL TO IMAGE QUALITY.

- THE LAYOUT SHOULD BE ARRANGED SO THAT THE 5G LINE IS CONTAINED TO THE MAGNET ROOM. IF NOT POSSIBLE, A BARRIER IS RECOMMENDED TO PREVENT ENTRY TO THE 5G FIELD AREA.
- THE SPACES AROUND, ABOVE, AND BELOW THE MAGNET MUST BE REVIEWED FOR EFFECTS OF THE 5G, 3G, 1G, AND .5G FIELDS. REFER TO THE PROXIMITY LIMIT CHART IN THE MR PRE-INSTALLATION MANUAL REFERENCED ON C1.
- FOR MOVING METAL, THE RESTRICTION LINES TYPICALLY EXTEND OUTSIDE OF THE MRI SPACE. PLEASE CONFIRM THERE ARE NO MOVING METAL CONCERNS WITHIN THESE AREAS. AN EMI STUDY IS RECOMMENDED IF THE RESTRICTION LINES ARE VIOLATED.
- FOR VIBRATION, ANALYSIS TO BE COMPLETED AS REQUIRED PER PRE-INSTALLATION MANUAL.
- FOR EMI, REVIEW THE SITE FOR THE LOCATION OF THE MAIN ELECTRICAL FEEDERS, AC DEVICES, OR DISTRIBUTION SYSTEMS. AN EMI STUDY IS RECOMMENDED IF LARGE AC SYSTEMS ARE NEARBY.
- DETAILS OF THE FLOOR BELOW THE MAGNET MUST BE REVIEWED. THE STRUCTURAL ENGINEER MUST VERIFY THAT THE QUANTITY OF STEEL IN THE VOLUME 10FT (3.1M) X 10FT (3.1M) X 1FT (.3M) DEEP (BELOW THE MAGNET) DOES NOT EXCEED THE ALLOWABLE STEEL CONTENT AS GIVEN IN THE MR PRE-INSTALLATION MANUAL REFERENCED ON SHEET C1.

RESPONSIBILITY FOR THE COORDINATION, DESIGN, ENGINEERING, AND SITE PREPARATION RESIDES WITH THE CUSTOMER AND THEIR PROJECT ARCHITECTS AND CONTRACTORS. GE DOES NOT, BY PROVIDING REVIEWS AND FURNISHING COMMENTS AND ASSISTANCE, ACCEPT ANY RESPONSIBILITY BEYOND ITS OBLIGATIONS AS DEFINED IN THE MR SYSTEM, SALE/PURCHASE AGREEMENT.

**IMAGE QUALITY CONSIDERATIONS**

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 (MICRO 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 & SUPPORT HARDWARE) AND CARPETING
- ELECTRICAL FIXTURES (I.E. LIGHTING FIXTURES, TRACK LIGHTING, EMERGENCY LIGHTING, BATTERY CHARGERS, OUTLETS)
- DUCTING FOR HVAC AND CABLE ROUTING
- RF SHIELD SEALS (WALLS, DOORS, WINDOWS ETC.)

FOR ADDITIONAL INFORMATION REGARDING IMAGE QUALITY, REFER TO THE PRE-INSTALLATION MANUAL LISTED ON SHEET C1.

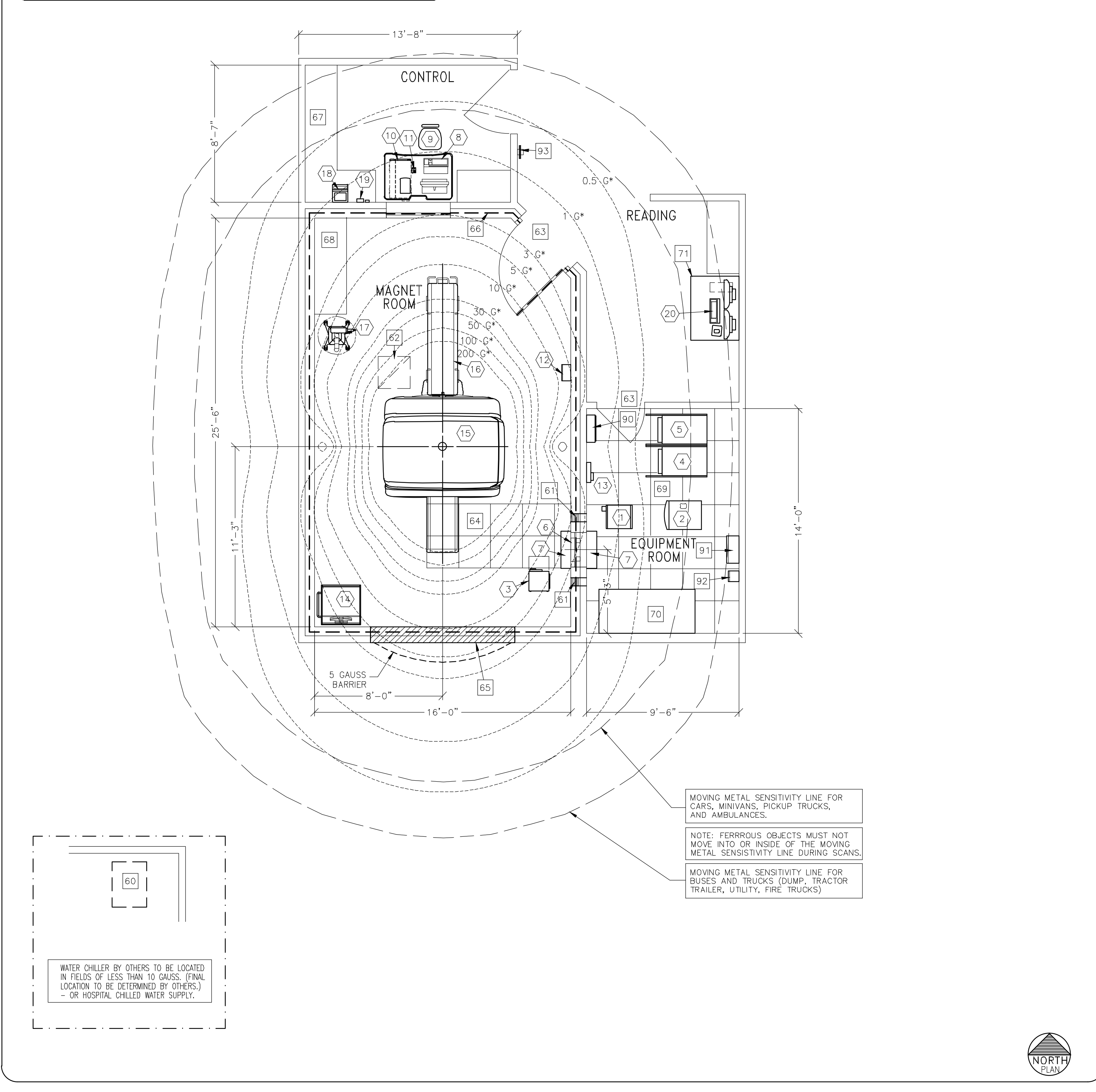
NOTE: VERIFY DELIVERY ROUTE FOR MAGNET, EQUIPMENT, AND SERVICE EQUIPMENT PRIOR TO DELIVERY.

**CRITICAL ITEMS FOR MAGNET DELIVERY**

- 24/7 CHILLED WATER AND 480V POWER FOR SHIELD/CRYO COOLER
- 24/7 120V POWER FOR THE MAGNET MONITOR
- PHONE LINES FOR MAGNET MONITORING AND EMERGENCY USE
- MAGNET ROOM EXHAUST FAN
- CRYOGEN VENTING (IF ROOF HATCH, COMPLETED WITHIN 24 HRS)
- MAGNET ANCHORS INSTALLED AND TESTED

THIS IS ONLY A PARTIAL LIST OF ITEMS REQUIRED FOR DELIVERY OF THE MAGNET. FOR A COMPLETE CHECKLIST REFER TO THE PRE-INSTALLATION MANUAL REFERENCED ON SHEET C1.

\* THE ISOGAUSS CONTOUR PLOTS DEPICTED ON THIS DRAWING REPRESENT MAGNETIC FIELDS RESULTING FROM THE NORMAL OPERATION OF THE MAGNET PROVIDED WITH THE MR SYSTEM. THE ACTUAL MAGNETIC FIELD INTENSITY AT ANY POINT IN THE VICINITY OF THE MAGNET WHEN INSTALLED MAY VARY FROM THE CONTOUR PLOTS DUE TO FACTORS SUCH AS THE CONCENTRATING EFFECTS OF NEARBY FERROUS OBJECTS, AMBIENT MAGNETIC FIELDS, INCLUDING THE EARTH'S MAGNETIC FIELD. THEREFORE, THE CONTOURS SHOWN ARE ONLY APPROXIMATIONS OF ACTUAL FIELD INTENSITIES FOUND AT A CORRESPONDING DISTANCE FROM THE MAGNET'S ISOCENTER.



**ANCILLARY ITEMS**

CUSTOMER/CONTRACTOR SUPPLIED AND INSTALLED ITEMS

ITEM NO.	ITEM DESCRIPTION (* INDICATES EXISTING)
60	WATER CHILLER
61	RF FILTERS - LOCATE WITHIN 24 IN. (610 mm) OF THE RF COMMON DUCT STUD
62	MAGNET ROOM EXHAUST FAN
63	MINIMUM DOOR OPENING FOR EQUIPMENT DELIVERY IS 43 IN. W X 86 IN. H (1092mm X 2183mm), CONTINGENT ON A 96 IN. (2438mm) CORRIDOR WIDTH
64	NON-METAL ACCESS FLOOR WITH 2' X 2' (610 X 610mm) REMOVABLE PANELS & SUPPORT HARDWARE REQUIRED WITHIN MAGNET ROOM
65	MINIMUM 9 FT.-0 IN. (2743 mm) X 9 FT.-0 IN. (2743 mm) REMOVABLE WALL SECTION FOR MAGNET DELIVERY/REMOVAL.
66	RF SCREEN, INCLUSIVE OF WALLS, FLOOR, DOOR, ETC. GROUND IMPEDANCE GREATER THAN 100 OHMS ATTENUATION 100dB AT 10-100MHZ PLANEWAVE.
67	COUNTERTOP WITH DRAWERS FOR MISCELLANEOUS ITEMS.
68	BASE CABINET FOR STORAGE OF SURFACE COILS, PATIENT POSITIONING PADS, PHANTOMS, ETC.
69	ACCESS FLOOR WITH 2' X 2' (610 X 610mm) REMOVABLE PANELS
70	AIR CONDITIONING. (VIBRATION ISOLATION IS RECOMMENDED AT SUPPORTS OF EACH UNIT TO BE INSTALLED.)
71	WORKSTATION TABLE

THE FOLLOWING ITEMS ARE AVAILABLE FROM GE HEALTHCARE TECHNOLOGIES. CONTACT YOUR LOCAL GE HEALTHCARE SERVICE REPRESENTATIVE FOR PRICING AND AVAILABILITY.

90	MAIN DISCONNECT CONTROL - 94 lbs. (43 kg), 900 BTU/HR (264w) - CAT NO. E4502SP FOR 480-3 WYE.
91	DC LIGHTING CONTROL PANEL 135 lbs (70 kg) 1024 BTU/HR (300w) (CAT. NO. E45053/SE BASIC SYSTEM)
92	DC LIGHTING AUTO TRANSFORMER 60 lbs (27 kg) (PART OF VARIABLE DIMMER SYSTEM) 171 btu/hr (50w) (CAT. NO. E45053/SP INCLUDES BASIC SYSTEM)
93	METAL TROUSER (HAND HELD)

**GENERAL SPECIFICATIONS**

- THE REQUIRED CEILING HEIGHT INDICATED ON THESE PLANS IS TO ENSURE EQUIPMENT FUNCTION IS NOT INHIBITED. CONSULT WITH YOUR LOCAL GEHC IS SPECIALIST REGARDING ACCEPTABILITY OF OTHER CEILING HEIGHTS.
- CHECK ALL DOOR OPENINGS AND HALLWAYS FROM DELIVERY LOCATION TO WHERE EQUIPMENT IS TO BE INSTALLED TO ENSURE THE ROUTE PHYSICALLY AND STRUCTURALLY WILL ACCOMMODATE THE EQUIPMENT AS SHIPPED.
- RADIATION PROTECTION REQUIREMENTS ARE NOT INDICATED ON THIS PLAN. WHERE NEEDED PER NATIONAL OR LOCAL CODE THEY SHALL BE SPECIFIED BY A QUALIFIED RADIOLOGICAL PHYSICIST.
- THE DEVELOPMENT OF THE EQUIPMENT LAYOUT, ROOM DIMENSIONS, MECHANICAL AND ELECTRICAL SUGGESTIONS IS PRECIPITATED UPON THE BEST INFORMATION OBTAINABLE FROM THE SITE, COUPLED WITH THE CUSTOMER'S KNOWN DESIRES. ARCHITECTURAL OR ELECTRICAL CHANGES INCLUDING RELOCATION OF EQUIPMENT ILLUSTRATED ON THIS DRAWING IS ALLOWED ONLY WITH NOTIFICATION, IN WRITING, AND REVIEW BY GEHC SERVICE DEPARTMENT. EQUIPMENT OPERATION, SERVICEABILITY, AND RESTRICTING CABLE LENGTHS, ETC., MAKE THIS ESSENTIAL FOR A PROPER IS. GEHC RESERVES THE RIGHT TO MAKE ON THE JOB CHANGES BECAUSE OF CUSTOMER REQUIREMENTS AND/OR OBSTACLES IN CONSTRUCTION, ETC.
- ALL WORK TO BE IN COMPLIANCE WITH NATIONAL AND LOCAL BUILDING SAFETY CODES.
- DIMENSIONS ARE TO FINISHED SURFACES OF ROOM

**SITE ENVIRONMENT SPECIFICATIONS**

- AMBIENT OPERATING TEMPERATURE: 59-89.6 DEG (F) [15-32 (C)] FOR THE CONTROL AND EQUIPMENT AREAS, [59-89.8 DEG (F) [15-24 (C)] FOR THE MAGNET ROOM. MAXIMUM ALLOWABLE TEMPERATURE CHANGE OF 5 DEG (F)/HR [3 (C)/HR]. MAXIMUM ROOM TEMPERATURE GRADIENT 5 DEG (F) [3 (C)].
- HUMIDITY: 30 TO 75 (30-60 FOR THE MAGNET ROOM) PERCENT NON-CONDENSING, MAXIMUM ALLOWABLE CHANGE OF 5 PERCENT/HOUR.
- ENVIRONMENTAL RESTRICTIONS ABOVE MUST NOT BE EXCEEDED FOR THE ELECTRONICS.
- DO NOT RESTRICT THE AIR INTAKE OR AIR EXHAUST OF THE SYSTEM COMPONENTS.
- ENVIRONMENTAL CONDITIONS LISTED ABOVE MUST BE MAINTAINED AT ALL TIMES INCLUDING FOR EXAMPLE OVERTIME, WEEKENDS, AND HOLIDAYS.
- THE SHIELD COOLER COMPRESSOR CABINET REQUIRES WATER COOLING TO DISSIPATE THE HEAT OUTPUT. HEAT DISSIPATION TO AIR IS NEGLIGIBLE. 24 HOUR POWER AND WATER COOLING MUST BE AVAILABLE UPON MAGNET DELIVERY.
- CRYOGEN VENTING AND MAGNET ROOM EXHAUST FAN SYSTEMS MUST BE COMPLETED IN THE MAGNET ROOM PRIOR TO DELIVERY.
- FLUORESCENT LIGHTING IS NOT ALLOWED IN THE MAGNET ROOM DUE TO RF NOISE.

**MAGNETIC INTERFERENCE SPECIFICATIONS**

- THE CUSTOMER MUST ESTABLISH PROTOCOLS TO PREVENT PERSONS WITH CARDIAC PACEMAKERS, NEUROSTIMULATORS, AND BIOSTIMULATION DEVICES FROM ENTERING MAGNETIC FIELDS OF GREATER THAN 5 GAUSS (EXCLUSION ZONE).
- MAIN POWER TRANSFORMERS MUST REMAIN OUTSIDE THE 3 GAUSS FIELD. EMI < 40mG AC, EMI < 4.43mG DC.
- POTENTIAL EXISTS UNDER FAULT CONDITIONS THAT THE 5 GAUSS LINE MAY EXPAND RADIALLY TO 16.4 FT. (5.0 m) AND AXIALLY TO 22.96 FT. (7.0 m) FOR 2 SECONDS OR LESS. IT SHOULD BE NOTED THAT NORMAL RAMPDOWNS OR MRU (MAGNET RUNDOWN UNIT) INITIATED QUENCHES WILL NOT CAUSE THE MAGNETIC FIELD TO EXPAND.
- IT IS RECOMMENDED EVERY SITE CONSIDER THE EVENT OF A QUENCH AND PLAN ACCORDINGLY (SUCH AS PLACING 5 GAUSS WARNING SIGNS AT EXPANDED LOCATIONS).
- THE FERROUS METAL OBJECTS LISTED BELOW MUST NOT MOVE INTO OR INSIDE OF THE MOVING METAL SENSITIVITY LINE DURING SCANS.

TYPICAL MOVING MAGNETIC MASS	DISTANCE RADIALLY	DISTANCE AXIALLY
CARTS, GURNEYS 100-400 lbs [45-182 kg]	3 GAUSS LINE	3 GAUSS LINE
FORKLIFTS, SMALL ELEVATOR, CARS, MINIVANS VANS, PICKUP TRUCKS, AMBULANCES (OBJECTS GREATER THAN 400 lbs [182 kg])	15.5 ft. [4.72 m]	21.0 ft. [6.4 m]
BUSES AND TRUCKS (DUMP, TRACTOR TRAILER, UTILITY, FIRE TRUCKS)	18.1 ft. [5.52 m]	24.5 ft. [7.47 m]

This drawing is based on Sketch No.: 8-206

PROJECT TITLE: EQUIPMENT LAYOUT  
MODALITY TYPE: 1.5T SIGNA HDx

8-206f  
TYPICAL LAYOUT

PROJECT: 8-206F REVISION: 03  
DATE: 11.JAN.12  
DRAWN BY: PMM  
CHECKED BY: TMS

REVISION HISTORY:

SHEET A1

GE Healthcare  
IS Services Design Center  
Milwaukee, Wisconsin

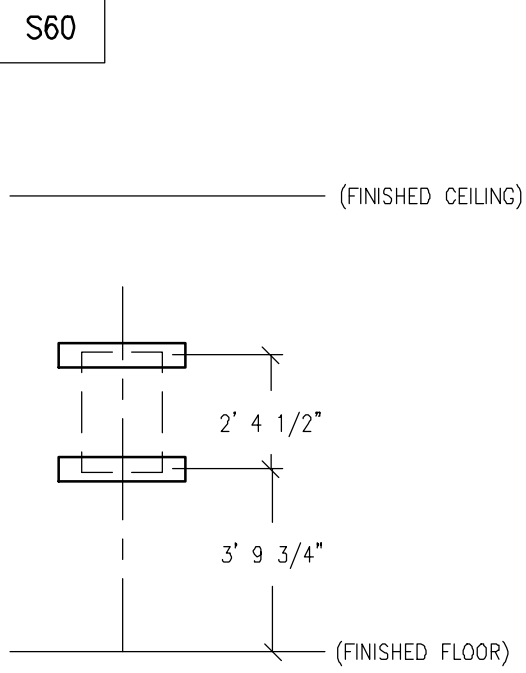
TYPICAL WALL SUPPORT ELEVATIONS

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

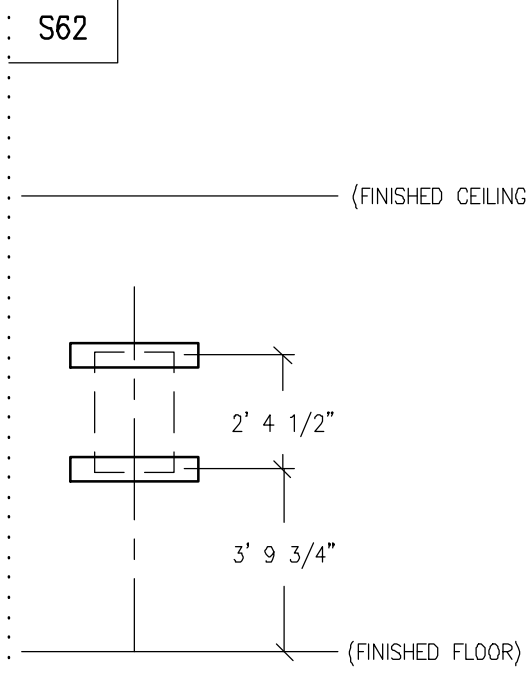
STRUCTURAL LAYOUT

RECOMMENDED CEILING HEIGHT = 8'-9"

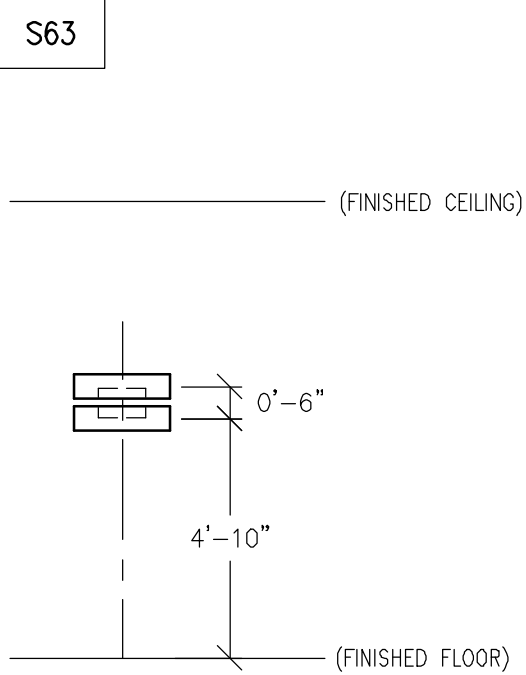
STRUCTURAL SUPPORT METHODS



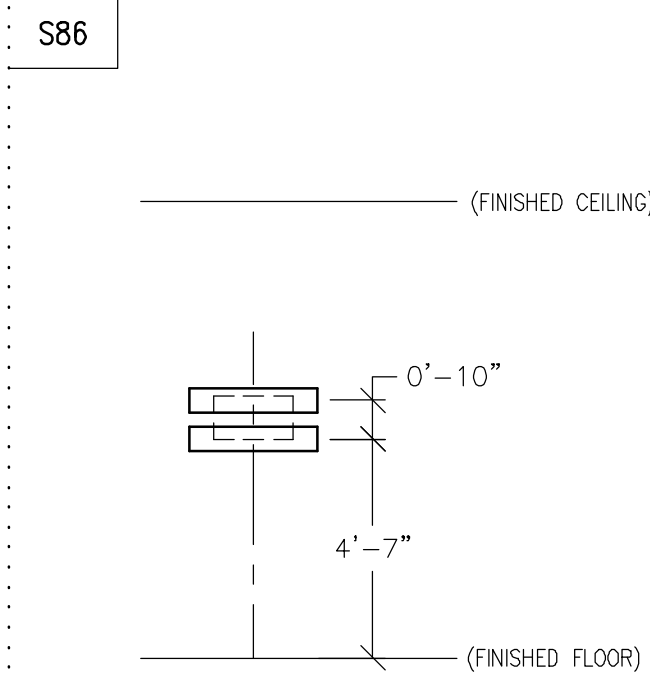
S60  
SUPPORT FOR  
MAIN DISCONNECT CONTROL  
(NOT TO SCALE)



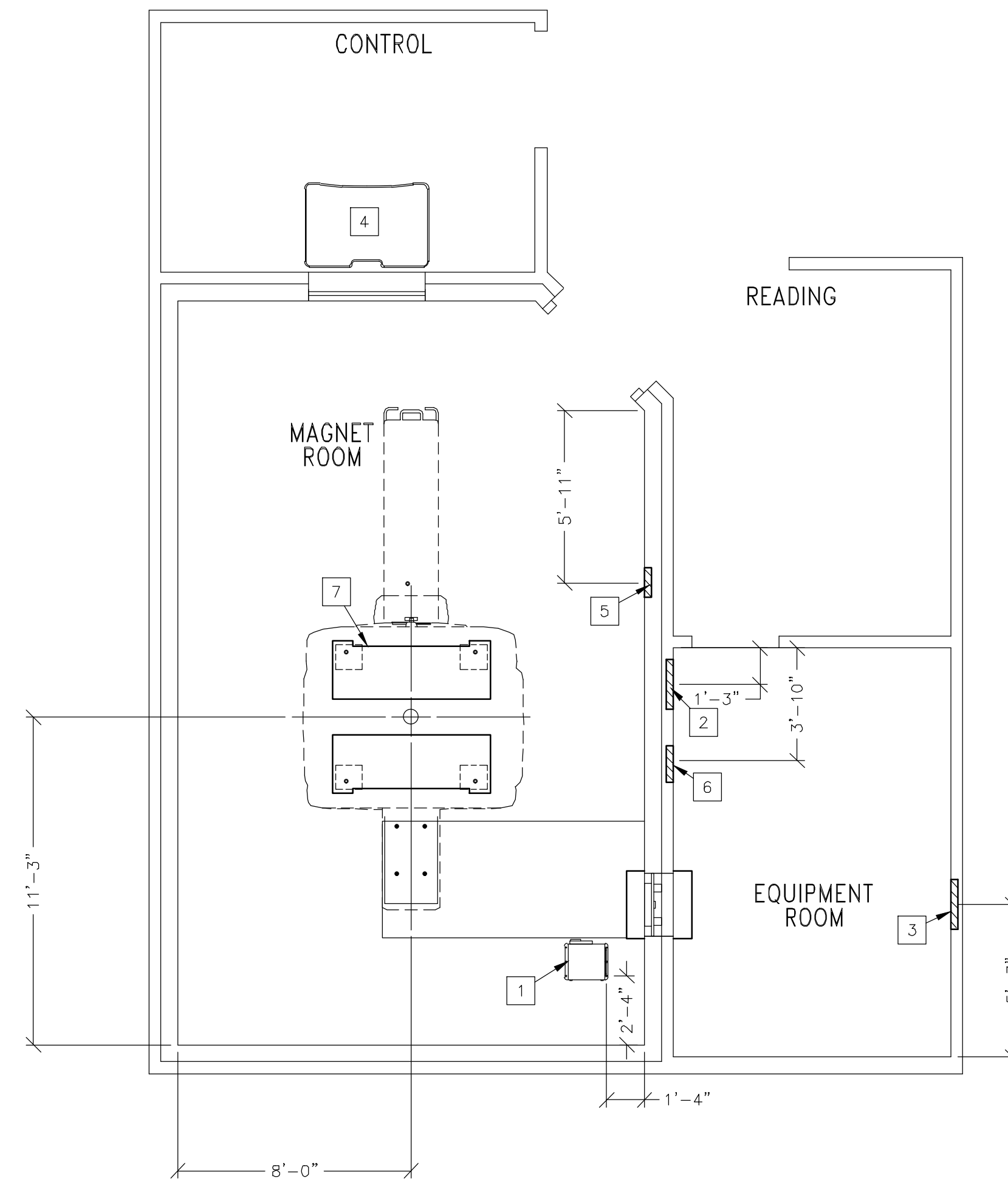
S62  
SUPPORT FOR  
DC LIGHTING CONTROLLER  
(NOT TO SCALE)



S63  
SUPPORT FOR  
MAGNET RUNDOWN UNIT  
(NOT TO SCALE)



S86  
SUPPORT FOR  
MAGNET MONITOR  
(NOT TO SCALE)



CUSTOMER/CONTRACTOR SUPPLIED AND INSTALLED ITEMS

ITEM NO.	ITEM DESCRIPTION (* INDICATES EXISTING)
1	FLOOR MOUNTING AREA FOR BLOWER BOX. SEE DETAIL MSB-1S ON SHEET S2.
2	SUPPORT BACKING, LOCATE AS SHOWN, REFER TO ELEVATION DETAIL S60, FOR MAIN DISCONNECT CONTROL.
3	SUPPORT BACKING, LOCATE AS SHOWN, REFER TO ELEVATION DETAIL S62, FOR DC LIGHTING CONTROL.
4	SEE DETAIL MOS-1SG ON SHEET S2 FOR FLOOR MOUNTING OF OPERATOR WORKSPACE.
5	SUPPORT BACKING, LOCATE AS SHOWN, REFER TO ELEVATION DETAIL S63, FOR MAGNET RUNDOWN UNIT.
6	SUPPORT BACKING, LOCATE AS SHOWN, REFER TO ELEVATION DETAIL S86, FOR MAGNET MONITOR.
7	MAGNET FLOOR MOUNTING, SEE DETAIL M661SA2 ON SHEET S2 FOR MORE INFORMATION.

STRUCTURAL NOTES

- ALL UNITS THAT ARE WALL MOUNTED OR WALL SUPPORTED ARE TO BE PROVIDED WITH SUPPORTS WHERE NECESSARY. WALL SUPPORTS ARE TO BE SUPPLIED AND INSTALLED BY THE CUSTOMER OR HIS CONTRACTORS. SEE PLAN AND DETAIL SHEETS FOR SUGGESTED LOCATIONS AND MOUNTING HOLE LOCATIONS.
- DIMENSIONS ARE TO FINISHED SURFACES OF ROOM.
- CERTAIN MR PROCEDURES REQUIRE AN EXTREMELY STABLE ENVIRONMENT TO ACHIEVE HIGH RESOLUTION IMAGE QUALITY. VIBRATION IS KNOWN TO INTRODUCE FIELD INSTABILITIES INTO THE IMAGING SYSTEM. THE VIBRATION EFFECTS ON IMAGE QUALITY CAN BE MINIMIZED DURING THE INITIAL SITE PLANNING OF THE MR SUITE BY MINIMIZING THE VIBRATION ENVIRONMENT. SEE MOUNTING DETAIL ON SHEET S2 FOR ADDITIONAL INFORMATION.
- STANDARD STEEL STUDS, NAILS, SCREWS, CONDUIT, PIPING, DRAINS AND OTHER HARDWARE ARE ACCEPTABLE IF PROPERLY SECURED. ANY LOOSE STEEL OBJECTS CAN BE VIOLENTLY ACCELERATED INTO THE BORE OF THE MAGNET. CAREFUL THOUGHT SHOULD BE GIVEN TO THE SELECTION OF LIGHT FIXTURES, CABINETS, WALL DECORATIONS, ETC. TO MINIMIZE THIS POTENTIAL HAZARD. FOR SAFETY, ALL REMOVABLE ITEMS WITHIN THE MAGNET ROOM SUCH AS FAUCET HANDLES, DRAIN COVERS, SWITCH BOX COVER PLATES, LIGHT FIXTURE COMPONENTS, MOUNTING SCREWS, ETC. MUST BE NON-MAGNETIC. IF YOU HAVE A SPECIFIC QUESTION ABOUT MATERIAL, BRING IT TO THE ATTENTION OF YOUR GE PROJECT MANAGER OF INSTALLATIONS.
- FLOOR LEVELNESS IN THE MAGNET ROOM SHOULD NOT EXCEED 0.3125 in. (8 mm) WHEN MEASURING BETWEEN DEPRESSIONS AND HIGH SPOTS OVER ANY 120 in. (3048 mm) DISTANCE WITHIN THE 87.5 in. (2178 mm) BY 139.3 in. (3539 mm) AREA OF THE MAGNET ENCLOSURE AND THE AREA IN FRONT OF THE ENCLOSURE. THIS FLOOR LEVELNESS REQUIREMENT IS IMPORATANT FOR ACCURATE PATIENT TABLE DOCKING.
- NON-MOVABLE STEEL SUCH AS WALL STUDS OR HVAC COMPONENTS WILL PRODUCE NEGLIGIBLE EFFECT ON THE ACTIVE SHIELD MAGNET.
- CUSTOMERS CONTRACTOR MUST PROVIDE ALL PENETRATIONS IN POST TENSION FLOORS.
- CUSTOMERS CONTRACTOR MUST PROVIDE AND INSTALL ANY NON-STANDARD ANCHORING. DOCUMENTS FOR STANDARD ANCHORING METHODS ARE INCLUDED WITH GE EQUIPMENT DRAWINGS FOR GEOGRAPHIC AREAS THAT REQUIRE SUCH DOCUMENTATION.
- CUSTOMERS CONTRACTOR MUST PROVIDE AND INSTALL HARDWARE FOR "THROUGH THE FLOOR" ANCHORING AND/OR ANY BRACING UNDER ACCESS FLOORS. THIS CONTRACTOR MUST ALSO PROVIDE FLOOR DRILLING THAT CANNOT BE COMPLETED BECAUSE OF AN OBSTRUCTION ENCOUNTERED WHILE DRILLING BY THE GE INSTALLER SUCH AS REBAR ETC.
- CUSTOMERS CONTRACTOR TO PROVIDE AND INSTALL APPROPRIATE SUPPORTS FOR THE STORAGE OF EXCESS CABLES.
- IT IS THE CUSTOMER'S RESPONSIBILITY TO PERFORM ANY FLOOR OR WALL PENETRATIONS THAT MAY BE REQUIRED. THE CUSTOMER IS ALSO RESPONSIBLE FOR ENSURING THAT NO SUBSURFACE UTILITIES (E.G., ELECTRICAL OR ANY OTHER FORM OF WIRING, CONDUITS, PIPING, DUCT WORK OR STRUCTURAL SUPPORTS (I.E. POST TENSION CABLES OR REBAR)) WILL INTERFERE OR COME IN CONTACT WITH SUBSURFACE PENETRATION OPERATIONS (E.G. DRILLING AND INSTALLATION OF ANCHORS/SCREWS) PERFORMED DURING THE INSTALLATION PROCESS. TO ENSURE WORKER SAFETY, GE INSTALLERS WILL PERFORM SURFACE PENETRATION OPERATIONS ONLY AFTER THE CUSTOMER'S VALIDATION AND COMPLETION OF THE "GE SURFACE PENETRATION PERMIT"

SHEET TITLE: STRUCTURAL LAYOUT  
MODALITY TYPE: 1.5T SIGNA HDx

THIS PLAN IS SUBMITTED TO SUGGEST LOCATION OF GE HEALTHCARE EQUIPMENT AND ASSOCIATED APPARATUS, ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. THE CUSTOMER OR HIS CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL UTILITIES AND EQUIPMENT BEFORE INSTALLATION. GE HEALTHCARE ACCEPTS NO LIABILITY FOR ACTUAL CONSTRUCTION PURPOSES; HOWEVER, AND THE COMPANY CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

PROJECT TITLE:  
8-206f  
TYPICAL LAYOUT

PROJECT: 8-206F  
REVISION: 03  
DATE: 11.JAN.12  
DRAWN BY: PMM  
CHECKED BY: TMS

REVISION HISTORY:  
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SHEET  
S1

This drawing is based on Sketch No.: 8-206

PIM R8

**GE Healthcare**  
IS Services Design Center  
Milwaukee, Wisconsin

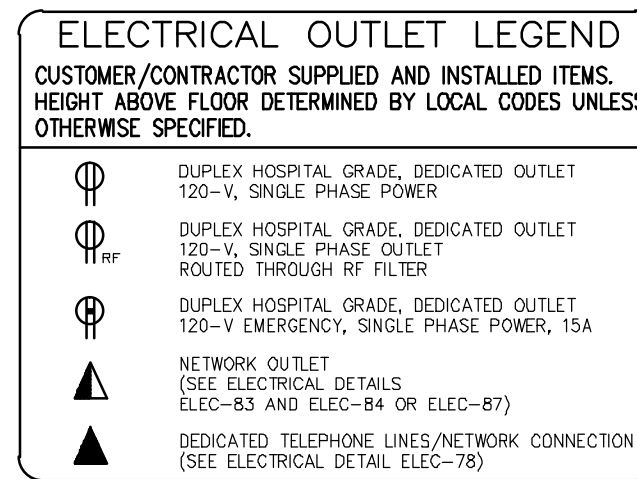
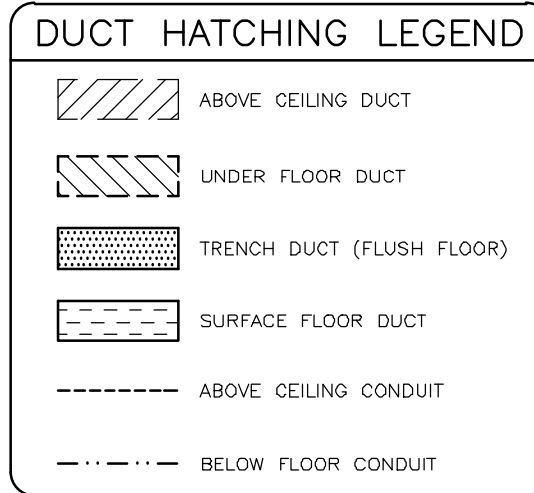


SCALE: 1/4" = 1'-0"

ELECTRICAL PLAN

RECOMMENDED CEILING HEIGHT = 8'-9"

JUNCTION POINT DESCRIPTIONS



**FEEDER TABLE - 1.5T SIGNA SYSTEMS**

• CALCULATIONS BASED UPON NOMINAL VOLTAGE, WIRE SIZE IN AWG.  
 • RECOMMENDED FEEDER SIZES FROM DIST. TRANS. TO MDP. ALL CALCULATIONS BASED UPON A 20 FT. (6.1m) RUN FROM MDP TO PD USING NO.2 AND (35-50 mm).  
 • THE GROUNDING CONDUCTOR (1) SHALL BE COPPER AND WILL RUN IN THE SAME CONDUIT AS THE FEEDERS FROM EQUIPMENT BACK TO THE ROOM POWER SOURCE GROUNDING POINT.  
 • THE GROUND CONDUCTOR BETWEEN THE MDP AND PDU MUST BE AT LEAST 1/0 AWG OR THE SAME SIZE AS THE FEEDER, WHICHEVER IS LARGER.  
 • IF THE GENERAL ELECTRIC EQUIPMENT IS BEING FED BY A DELTA SECONDARY, IT IS RECOMMENDED THAT THE B PHASE ON THE SECONDARY BE CONNECTED TO GROUND TO PREVENT DAMAGE TO THE SYSTEM.  
 • NEUTRAL MUST BE TERMINATED PRIOR TO OR INSIDE THE MAIN DISCONNECT PANEL AND NOT BROUGHT INTO THE PDU CABINET.  
 • FOR A FULL SYSTEM UPS REFER TO ELECTRICAL DETAILS FOR UPS FEEDER WIRES.

RUN LENGTH IN FEET	POWER SUPPLY VOLTAGE							
	342-418 380		360-440 400		374-456 415		432-528 480	
	FEEDER	GROUND	FEEDER	GROUND	FEEDER	GROUND	FEEDER	GROUND
100	2	8	2	8	2	8	2	8
150	2	8	2	8	2	8	2	8
200	1	6	2	8	2	8	2	8
250	1/0	6	1/0	6	1	6	2	8
300	2/0	4	2/0	4	1/0	6	1	6
350	3/0	4	2/0	4	2/0	4	1	6
400	4/0	2	3/0	4	3/0	4	1/0	6
450	4/0	2	4/0	2	3/0	4	2/0	4

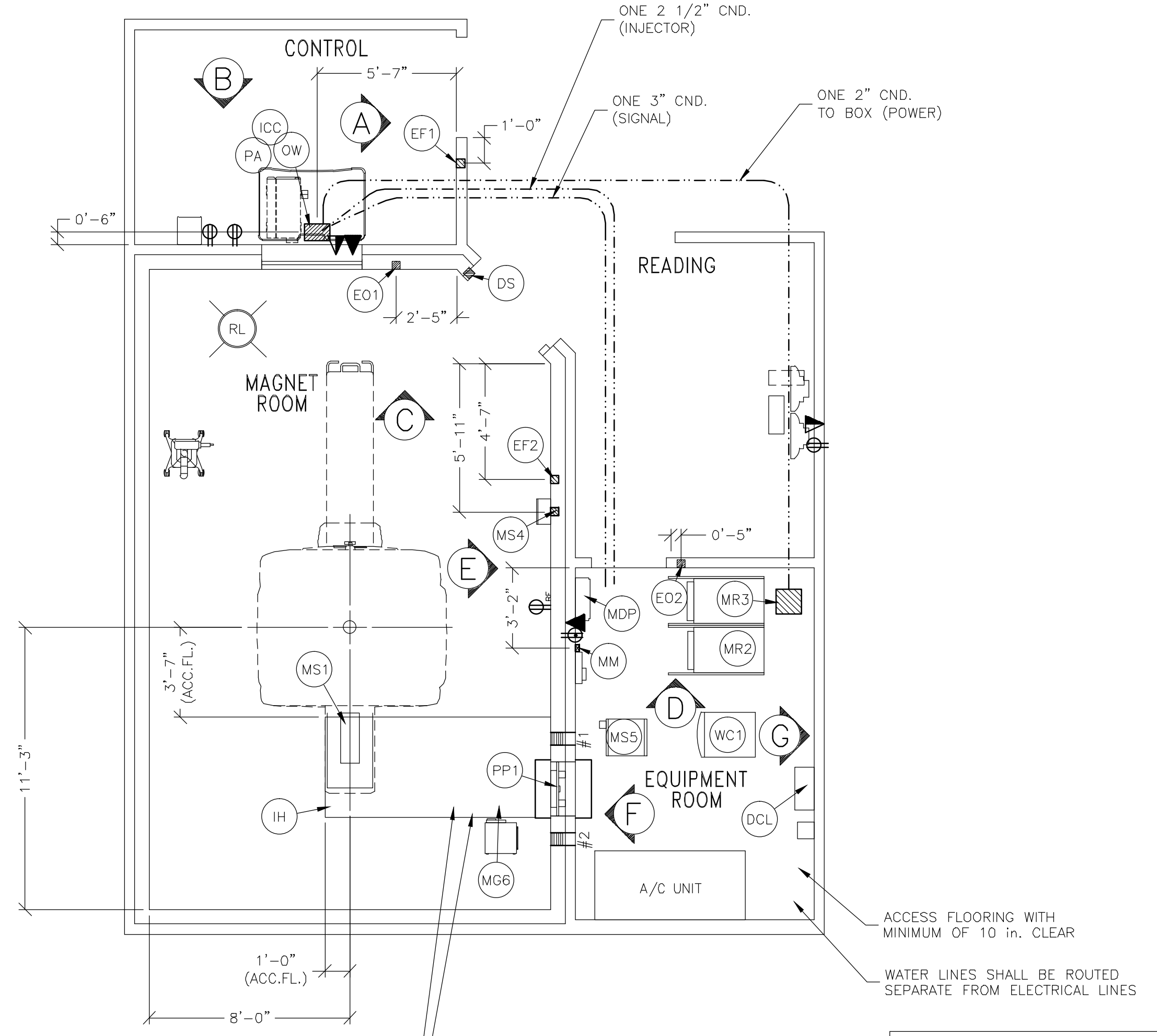
REV. DATE: 06/16/09

**JUNCTION POINT NOTES**

- ALL JUNCTION BOXES, CONDUIT, DUCT, DUCT DIVIDERS, SWITCHES, CIRCUIT BREAKERS, ETC., ARE TO BE SUPPLIED AND INSTALLED BY CUSTOMER'S ELECTRICAL CONTRACTOR.
- CONDUIT AND DUCT RUNS SHALL HAVE SWEEP RADIUS BENDS.
- CONDUITS AND DUCT ABOVE CEILING OR BELOW FINISHED FLOOR MUST BE INSTALLED AS NEAR TO CEILING OR FLOOR AS POSSIBLE TO REDUCE RUN LENGTH.
- CEILING MOUNTED JUNCTION BOXES ILLUSTRATED ON THIS PLAN MUST BE INSTALLED FLUSH WITH FINISHED CEILING.
- ALL DUCTWORK MUST MEET THE FOLLOWING REQUIREMENTS:
  - DUCTWORK SHALL BE METAL WITH DIVIDERS AND HAVE REMOVABLE, ACCESSIBLE COVERS.
  - DUCTWORK SHALL BE CERTIFIED/RATED FOR ELECTRICAL POWER PURPOSES.
  - DUCTWORK SHALL BE ELECTRICALLY AND MECHANICALLY BONDED TOGETHER IN AN APPROVED MANNER.
  - PVC AS A SUBSTITUTE MUST BE USED IN ACCORDANCE WITH ALL LOCAL AND NATIONAL CODES.
- ALL OPENINGS IN ACCESS FLOORING ARE TO BE CUT OUT AND FINISHED OFF WITH GROMMET MATERIAL BY THE CUSTOMER'S CONTRACTOR.
- GENERAL CONTRACTOR TO INSERT PULL CORDS FOR ALL CABLE RUN CONDUITS BETWEEN THE EQUIPMENT ROOM AND THE OPERATORS CONTROL ROOM.
- 10 FOOT PIGTAILS AT ALL JUNCTION POINTS.
- ALL WIRING MUST BE THHN OR TFFN STRANDED COPPER THERMOPLASTIC 600 VOLT OR EQUIVALENT INSULATION. ALUMINUM OR SOLID WIRES ARE NOT ALLOWED.
- GROUNDING IS CRITICAL TO EQUIPMENT FUNCTION AND PATIENT SAFETY. SITE MUST CONFORM TO WIRING SPECIFICATIONS SHOWN ON THIS PLAN.

POINT	DESCRIPTION	QTY.	HARDWARE	DETAIL NO., SHT. E3
DCL	DC LIGHTING	1	SEE DETAILS	ELEC-54
DS	RF DDDR SWITCH	1	AVAILABLE FROM GEMSG CALL 800-588-5102 OR LOCAL GE INSTALLATION PROJECT MGR	
EF1	RF EXHAUST FAN SWITCH	1	SINGLE GANG BOX	ELEC-55
EF2	RF EXHAUST FAN SWITCH	1	SINGLE GANG BOX	ELEC-55
ED1	EMERGENCY OFF BUTTON	1	SINGLE GANG BOX	ELEC-16
ED2	EMERGENCY OFF BUTTON	1	SINGLE GANG BOX	ELEC-16
ICC	INJECTOR DISPLAY	1	SAME ROUTING AS DW	
IH	INJECTOR HEAD	1	12 IN. OF GROMMET MATERIAL FOR A 3 X 3 IN. OPENING IN ACCESS FLOOR OR DUCT	
MDP	MAIN DISCONNECT	1	3-POLE 480V DEVICE IN NEMA 1 ENCLOSURE, GEMSG CAT. NO. E4502SP	ELEC-10 ELEC-57 ELEC-140
MG6	BLOWER BOX	1	40 IN. OF GROMMET MATERIAL FOR A 12 X 8 IN. OPENING IN ACCESS FLR	ELEC-10
MM	MAGNET MONITOR	1	FITTINGS AS REQUIRED	ELEC-78
MR2	RF CABINET	1	28 IN. OF GROMMET MATERIAL FOR ONE 10 X 4 IN. OPENING IN ACCESS FLR	ELEC-10
MR3	HFD/PDU CABINET	1	SPLIT COVERPLATE	ELEC-10 ELEC-139
MS1	MAGNET	1	66 IN. OF GROMMET MATERIAL FOR A 24 X 9 IN. OPENING IN ACCESS FLR	ELEC-10
MS4	MAGNET RUNDOWN UNIT	1	COVERPLATE WITH 1 IN. KNOCKOUT IN CENTER	ELEC-8
MS5	SHIELD COOLER CABINET	1	32 IN. OF GROMMET MATERIAL FOR AN 8 X 8 IN. OPENING IN ACCESS FLOOR	ELEC-10
DW	OPERATOR WORKSPACE	1	SPLIT COVERPLATE	ELEC-13
PA	PATIENT ALERT CONTROL BOX	1	BOX AS REQUIRED	
PP1	RF PENETRATION PANEL	1	100 IN. OF GROMMET MATERIAL FOR A 18 IN. X 6 IN. OPENING IN ACCESS FLOOR	ELEC-10 ELEC-58
RL	MAGNET ROOM LIGHTS	1	LOCKNUT	
WC1	WATER CHILLER	1	12 IN. OF GROMMET MATERIAL FOR A 3 X 3 IN. OPENING IN ACCESS FLOOR	ELEC-10

NOTE: REFER TO CONDUIT LEGEND FOR ALL ADDITIONAL CONDUITS NOT SHOWN ON DRAWING.



**ADDITIONAL CONDUIT RUNS (CONTRACTOR SUPPLIED AND INSTALLED)**

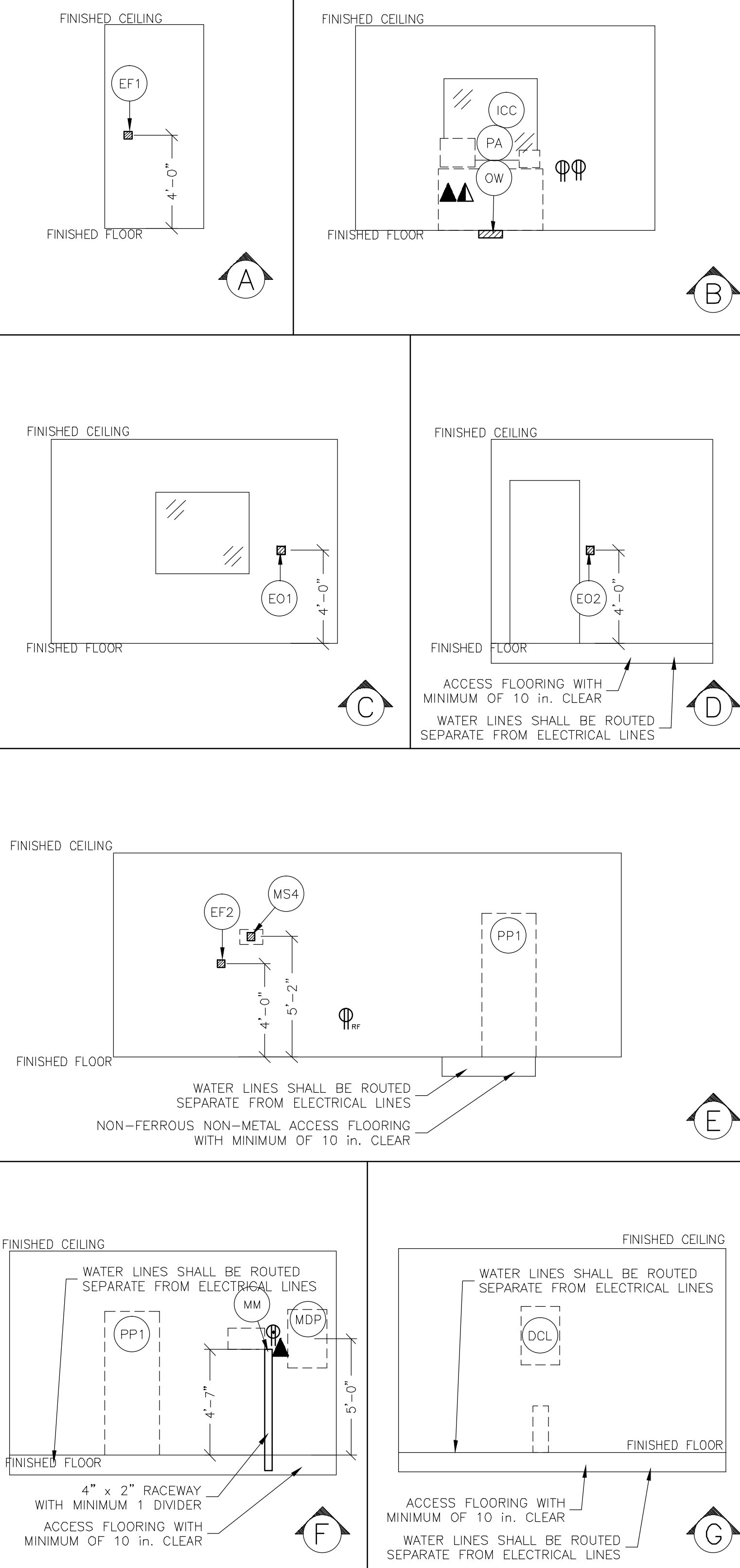
**CONDUITS REQUIRED FOR BASE SYSTEM**

FROM	TO	CONDUIT SIZE	REMARKS	REV DATE
MDP	TO FEEDER	ONE CND.	AS REQ'D	01/01/08
MDP	TO PD	ONE CND.	AS REQ'D	
MDP	TO E02	ONE 1/2" CND.		
MDP	TO PP1	ONE 3/4" CND.		
MDP	TO A/C	ONE 1/2" CND.		
DS	TO MR2	ONE 3/4" CND.		
E01	TO PP1	ONE 3/4" CND.		
MS4	TO PP1	ONE 1" CND.		
MS4	TO RF #1 FILTER	ONE CND.	AS REQ'D	
RF #1 FILTER	TO 120-V 1Ø POWER	CONDUIT AS REQ'D		
RL	TO RF #2 FILTER	ONE CND.	AS REQ'D	
RF #2 FILTER	TO FACILITY EMERGENCY POWER	CONDUIT AS REQ'D		

NOTE: SEE E2 PAGE FOR STANDARD RUN LENGTHS

**CONTRACTOR SUPPLIED AND INSTALLED WIRING**  
ELECTRICAL CONTRACTOR SHALL RING OUT AND TAG ALL WIRES AT BOTH ENDS.

WIRE RUN, FROM - TO	QUANTITY, WIRE SIZE/COLOR
MDP > MR3	3-NO. 2 BLACK, 1-NO. 1/0 GREEN (MAX. 20 FT. [6095MM])
MDP > A/C UNIT	1-NO. 12 BLACK, 1-NO. 12 WHITE, 1-NO. 12 GREEN
MDP > E02	1-BLACK, 1-RED, 1-GREEN - <SIZE AS REQUIRED>
480-V > MDP	3-BLACK, 1-WHITE, 1-GREEN - REFER TO FEEDER TABLE
RF FAN > EF1	1-BLACK, 1-WHITE - <SIZE AS REQUIRED>
EF1 > EF2	1-BLACK, 1-WHITE - <SIZE AS REQUIRED>
RF FILTER > MS4	1-BLACK, 1-WHITE, 1-GREEN - <SIZE AS REQUIRED>
120-V > RF FILTER	1-BLACK, 1-WHITE, 1-GREEN - <SIZE AS REQUIRED>
RF FILTER > RL	1-BLACK, 1-WHITE, 1-GREEN - <SIZE AS REQUIRED>
CONVERTER > RF FILTER	1-BLACK, 1-WHITE, 1-GREEN - <SIZE AS REQUIRED>
EMERG PWR > CONVERTER	1-BLACK, 1-WHITE, 1-GREEN - <SIZE AS REQUIRED>
RF GND STUD > RF FILTER	1-GREEN <SIZE AS REQUIRED FOR EACH FILTER>



This drawing is based on Sketch No.: 8-206

SHEET TITLE: ELECTRICAL LAYOUT  
MODALITY TYPE: 1.5T SIGNA HDX

THIS PLAN IS SUBMITTED TO SUGGEST LOCATION OF GE HEALTHCARE EQUIPMENT AND ASSOCIATED APPARATUS, ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EQUIPMENT AND WIRING TO ACTUAL CONSTRUCTION PURPOSES. HOWEVER, THE COMPANY CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

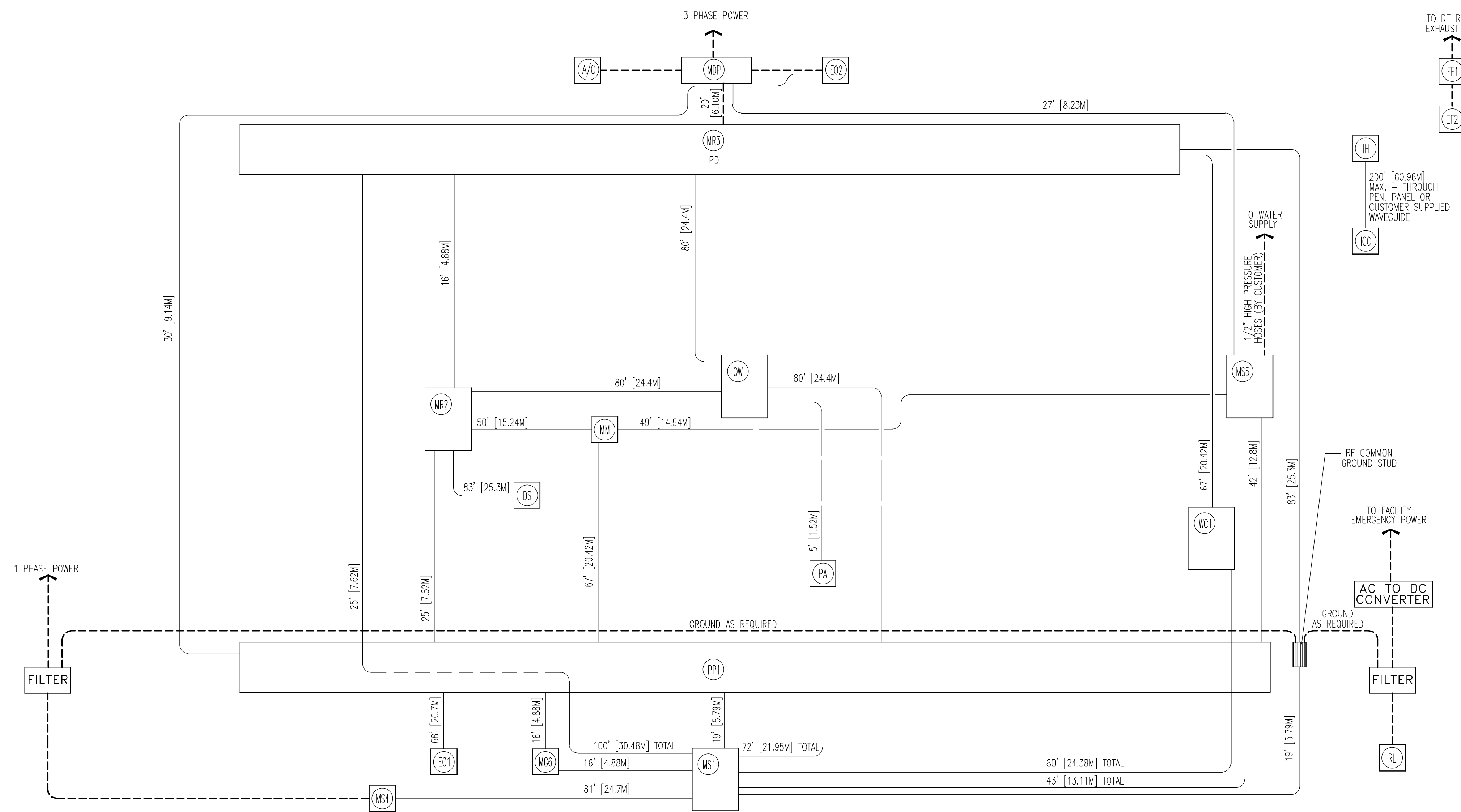
PROJECT TITLE: 8-206f  
TYPICAL LAYOUT

PROJECT: 8-206F  
REVISION: 03  
DATE: 11.JAN.12  
DRAWN BY: PMM  
CHECKED BY: TMS

REVISION HISTORY:

SHEET E1

INTERCONNECT DIAGRAM



**NOTE: CABLE LENGTH DATA**  
 THE USEABLE LENGTHS OF CABLES DISPLAYED ARE FOR CABLE KIT M3143PE. IF A DIFFERENT CABLE KIT IS REQUIRED, REFER TO THE PRE-INSTALLATION DIRECTION LISTED ON SHEET C1 FOR THE LENGTHS OF CABLES IN THAT KIT.

**MINIMUM BENDING RADIUS EXISTS FOR CERTAIN CABLE GROUPS. PLEASE REFER TO THE PREINSTALLATION MANUAL FOR SPECIFICATIONS FOR ALL CABLES.**

A PARTIAL LIST INCLUDES:  
 10" BETWEEN THE MR1 AND PP1  
 10" BETWEEN PP1 AND MS1  
 8" BETWEEN THE MS5 AND MS1  
 7" BETWEEN SYSTEM COOLING CABINET AND MS1.

**CABLE SELECTION**

**BASED UPON THE EQUIPMENT LAYOUT, CABLE KIT M3335NJ WILL NEED TO BE ORDERED.**

INTERCONNECTS		RELATIVE LENGTHS BY CATALOG		
LOCATION	DESCRIPTION	M3335NJ	M3335NK	M3335NL
L1	INTERCONNECTS BETWEEN PENETRATION PANEL (PP1) AND COMPONENTS IN THE MAGNET ROOM AND WITHIN MAGNET ROOM BETWEEN COMPONENTS	SHORT	SHORT	LONG
L2	INTERCONNECTS BETWEEN PENETRATION PANEL (PP1) AND COMPONENTS IN THE EQUIPMENT ROOM	SHORT	LONG	SHORT
L1/L2	INTERCONNECTS BETWEEN MAGNET ROOM AND EQUIPMENT ROOM COMPONENTS, INCLUDES INTERCONNECTS ROUTED THROUGH PP1 WAVEGUIDES AND INTERCONNECTS WHICH LENGTH PROVIDED IS CUT AT SITE AND SHARED BETWEEN MAGNET AND EQUIPMENT ROOMS	SHORT	LONG	LONG
L3	INTERCONNECTS BETWEEN COMPONENTS WITHIN EQUIPMENT ROOM	SAME LENGTH FOR ALL CATALOGS		
L4	INTERCONNECTS BETWEEN OPERATORS WORKSPACE AND PENETRATION PANEL	SAME LENGTH FOR ALL CATALOGS		
L5	INTERCONNECTS BETWEEN OPERATORS WORKSPACE AND COMPONENTS IN THE EQUIPMENT ROOM	SAME LENGTH FOR ALL CATALOGS		

POWER SPECIFICATIONS

SIGNA MR 1.5/3.0T SYSTEMS (REV. DATE 06/16/09)

**VOLTAGE**  
 PRIMARY SOURCE IS REQUIRED FOR ALL INSTALLATIONS. RANGE OF LINE VOLTAGES: NOMINAL LINE VOLTAGE OF 380 TO 480, 3 PHASE, 50 OR 60 HZ.  
 RECOMMENDED POWER SUPPLY: WYE-CONNECTED OR DELTA-CONNECTED (GROUNDED DELTA).

MAXIMUM DAILY VOLTAGE VARIATION MUST FALL WITHIN ONE OF THE RANGES IN TABLE A.

NOMINAL VOLTAGE	ABSOLUTE RANGE	CURRENT (AMPS)		MINIMUM STANDARD OVERCURRENT PROTECTION **
		MAX	MOMENTARY	
380	342-418	113	82	125-A
400	360-440	107	78	100-A
415	374-456	103	75	100-A
<b>480</b>	<b>432-528</b>	<b>89</b>	<b>65</b>	<b>90-A</b>

\*\* OVERCURRENT PROTECTION SIZED FOR 125% CONTINUOUS CURRENT. (CALCULATIONS BASED UPON NOMINAL VOLTAGE).

**PHASE-BALANCE.**  
 PHASE-TO-PHASE VOLTAGES MUST BE WITHIN 2 PERCENT OF THE LOWEST PHASE-TO-PHASE VOLTAGE. MAXIMUM ALLOWABLE TRANSIENT VOLTAGE EXCURSIONS ARE 1.8 PERCENT OF RATED LINE VOLTAGE AT A MAXIMUM DURATION OF 1 CYCLE AND FREQUENCY OF 10 TIMES PER HOUR.

VOLTAGE TRANSIENT OR IMPULSE ON THE INCOMING POWER MUST BE HELD TO A MINIMUM. TRANSIENTS CAUSED BY LIGHTNING, SURGES, LOAD SWITCHING, STATIC ELECTRICITY ETC. CAN CAUSE SCAN ABORTS OR IN EXTREME INSTANCES, COMPONENT FAILURE IN THE COMPUTER SUBSYSTEM.

**POWER DEMAND**  
 MAXIMUM POWER DEMAND = 74 KVA.  
 74 KVA CONSISTING OF 65 KVA FOR PDU + 9 KVA (CONTINUOUS OPERATION) FOR SHIELD/CRYO COOLER CABINET.

DEMAND	SIGNA SYSTEM
kva*	74
POWER FACTOR AT	0.9

\* DEMAND INCLUDES POWER FOR ENTIRE MR SYSTEM. LINE VOLTAGE REGULATION AT MAXIMUM POWER DEMAND MUST BE LESS THAN OR EQUAL TO 2 PERCENT OR 4 PERCENT FROM POWER SOURCE.

**DISTRIBUTION TRANSFORMER**  
 FOR A SINGLE UNIT INSTALLATION, THE MINIMUM TRANSFORMER SIZE IS 150 KVA. REGULATED TRANSFORMER IS NOT REQUIRED UNLESS VOLTAGE CHANGES EXCEED ±10% OVER A PERIOD OF 1 HOUR OR LONGER.

REFER TO DIRECTION LISTED ON C1 FOR ADDITIONAL INFORMATION.

ELECTRICAL NOTES

- NOTE 1: ALL WIRES SPECIFIED SHALL BE COPPER STRANDED, FLEXIBLE, THERMO-PLASTIC, COLOR CODED, CUT 10 FOOT LONG AT OUTLET BOXES, DUCT TERMINATION POINTS OR STUBBED CONDUIT ENDS. ALL CONDUCTORS, POWER, SIGNAL AND GROUND, MUST BE RUN IN A CONDUIT OR DUCT SYSTEM. ELECTRICAL CONTRACTOR SHALL RING OUT AND TAG ALL WIRES AT BOTH ENDS. WIRE RUNS MUST BE CONTINUOUS COPPER STRANDED AND FREE FROM SPLICES. ALUMINUM OR SOLID WIRES ARE NOT ALLOWED.
- NOTE 2: WIRE SIZES GIVEN ARE FOR USE OF EQUIPMENT. LARGER SIZES MAY BE REQUIRED BY LOCAL CODES.
- NOTE 3: IT IS RECOMMENDED THAT ALL WIRES BE COLOR CODED, AS REQUIRED IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES.
- NOTE 4: CONDUIT SIZES SHALL BE VERIFIED BY THE ARCHITECT, ELECTRICAL ENGINEER OR CONTRACTOR, IN ACCORDANCE WITH LOCAL OR NATIONAL CODES.
- NOTE 5: CONVENIENCE OUTLETS ARE NOT ILLUSTRATED. THEIR NUMBER AND LOCATION ARE TO BE SPECIFIED BY OTHERS. LOCATE AT LEAST ONE CONVENIENCE OUTLET CLOSE TO THE SYSTEM CONTROL, THE POWER DISTRIBUTION UNIT AND ONE ON EACH WALL OF THE PROCEDURE ROOM. USE HOSPITAL APPROVED OUTLET OR EQUIVALENT.
- NOTE 6: GENERAL ROOM ILLUMINATION IS NOT ILLUSTRATED. CAUTION SHOULD BE TAKEN TO AVOID EXCESSIVE HEAT FROM OVERHEAD SPOTLIGHTS. DAMAGE CAN OCCUR TO CEILING MOUNTING COMPONENTS AND WIRING IF HIGH WATTAGE BULBS ARE USED. RECOMMEND LOW WATTAGE BULBS NO HIGHER THAN 75 WATTS AND USE DIMMER CONTROLS (EXCEPT MR). DO NOT MOUNT LIGHTS DIRECTLY ABOVE AREAS WHERE CEILING MOUNTED ACCESSORIES WILL BE PARKED.
- NOTE 7: ROUTING OF CABLE DUCTWORK, CONDUITS, ETC., MUST RUN DIRECT AS POSSIBLE OTHERWISE MAY RESULT IN THE NEED FOR GREATER THAN STANDARD CABLE LENGTHS (REFER TO THE INTERCONNECTION DIAGRAM FOR MAXIMUM USABLE LENGTHS POINT TO POINT).
- NOTE 8: CONDUIT TURNS TO HAVE LARGE, SWEEPING BENDS WITH MINIMUM RADIUS IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES.
- NOTE 9: A SPECIAL GROUNDING SYSTEM IS REQUIRED IN ALL PROCEDURE ROOMS BY SOME NATIONAL AND LOCAL CODES. IT IS RECOMMENDED IN AREAS WHERE PATIENTS MIGHT BE EXAMINED OR TREATED UNDER PRESENT, FUTURE, OR EMERGENCY CONDITIONS. CONSULT THE GOVERNING ELECTRICAL CODE AND CONFER WITH APPROPRIATE CUSTOMER ADMINISTRATIVE PERSONNEL TO DETERMINE THE AREAS REQUIRING THIS TYPE OF GROUNDING SYSTEM.
- NOTE 10: THE MAXIMUM POINT TO POINT DISTANCES ILLUSTRATED ON THIS DRAWING MUST NOT BE EXCEEDED.
- NOTE 11: PHYSICAL CONNECTION OF PRIMARY POWER TO GE EQUIPMENT IS TO BE MADE BY CUSTOMERS ELECTRICAL CONTRACTOR WITH THE SUPERVISION OF A GE REPRESENTATIVE. THE GE REPRESENTATIVE WOULD BE REQUIRED TO IDENTIFY THE PHYSICAL CONNECTION LOCATION, AND INSURE PROPER HANDLING OF GE EQUIPMENT.

**DIAGRAM KEY**

---	CUSTOMER/CONTRACTOR SUPPLIED WIRING. ROUTE IN ADEQUATE CONDUIT OR RACEWAY.
—	GE FURNISHED CABLE RUNS. ROUTE IN EMPTY CONDUIT OR RACEWAY.
59' [18M]	MAXIMUM RUN LENGTH BETWEEN JUNCTION POINTS. Feet [Meters]

THIS SHEET IS PART OF THE DOCUMENT SET LISTED ON SHEET C1 AND SHOULD NOT BE SEPARATED

**GE Healthcare**  
 IS Services Design Center  
 Milwaukee, Wisconsin

SHEET TITLE: **ELECTRICAL SPECIFICATIONS**  
 MODALITY TYPE: **1.5T SIGNA HDX**

THIS PLAN IS SUBMITTED TO SUGGEST LOCATION OF GE HEALTHCARE EQUIPMENT AND ASSOCIATED APPARATUS, ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. THE USER SHALL VERIFY THE LOCATION OF ALL EQUIPMENT AND THE LOCATION OF ALL ELECTRICAL EQUIPMENT TO BE INSTALLED. THIS PLAN IS NOT TO BE USED FOR ACTUAL CONSTRUCTION PURPOSES; HOWEVER, AND THE COMPANY CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

PROJECT TITLE:  
**8-206f**  
 TYPICAL LAYOUT

PROJECT	REVISION
8-206F	03

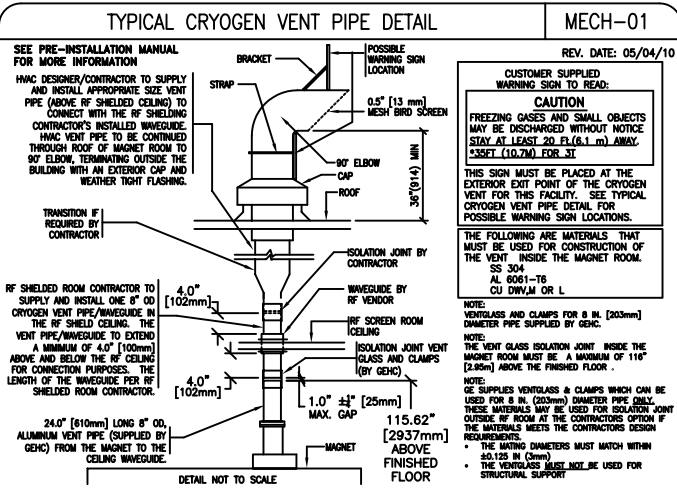
DATE: 11.JAN.12  
 DRAWN BY: PMM  
 CHECKED BY: TMS

REVISION HISTORY:


SHEET  
**E2**

This drawing is based on Sketch No.: 8-206 P1M R8





### CRYOGENIC VENT SYSTEM PRESSURE DROP MATRIX (A)

MECH-04

REV. DATE: 10/04/02

(THIS TABLE MUST BE USED FOR CRYOGENIC VENT SYSTEM DESIGN)

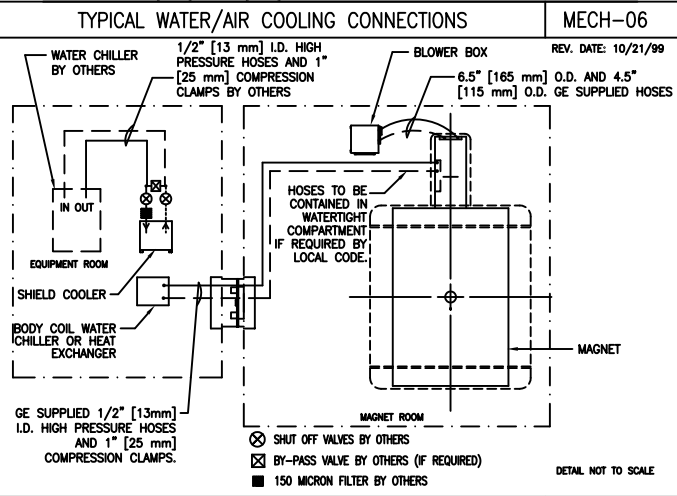
INSIDE DIAMETER OF VENT PIPE IN (mm)	DISTANCE OF VENT SYSTEM COMPONENT FROM MAGNET FT (m)	PRESSURE DROP PER ELBOW USED ANYWHERE WITHIN 20 FT VENT SEGMENT			
		STANDARD SWEEP ELBOW (KPa)	LONG SWEEP ELBOW (KPa)	LONG SWEEP ELBOW (KPa)	LONG SWEEP ELBOW (KPa)
8(203)	0-20 (0-6.1)	0.10 (2.28)	1.10 (7.58)	2.08 (14.20)	0.55 (3.79)
	20-40 (6.1-12.2)	0.21 (4.75)	2.10 (14.48)	3.70 (26.51)	1.03 (7.10)
	40-80 (12.2-24.4)	0.30 (6.70)	2.19 (15.62)	4.21 (30.03)	1.44 (10.33)
	80-100 (24.4-30.5)	0.38 (8.60)	2.70 (19.51)	6.71 (48.27)	1.85 (13.28)
	100-120 (30.5-36.6)	0.47 (10.53)	3.22 (23.08)	8.22 (59.11)	2.26 (16.34)
10(254)	0-20 (0-6.1)	0.03 (0.88)	0.55 (3.79)	0.82 (5.94)	0.27 (1.86)
	20-40 (6.1-12.2)	0.07 (1.58)	0.82 (5.94)	1.51 (10.41)	0.41 (2.83)
	40-80 (12.2-24.4)	0.12 (2.71)	1.10 (7.58)	2.19 (15.62)	0.68 (4.91)
	80-100 (24.4-30.5)	0.18 (3.62)	1.51 (10.41)	2.74 (19.51)	0.75 (5.17)
	100-120 (30.5-36.6)	0.24 (4.75)	1.85 (13.28)	3.43 (23.65)	0.98 (6.82)
12(305)	0-20 (0-6.1)	0.013 (0.29)	0.27 (1.86)	0.41 (2.83)	0.14 (0.97)
	20-40 (6.1-12.2)	0.021 (0.61)	0.41 (2.83)	0.75 (5.17)	0.21 (1.45)
	40-80 (12.2-24.4)	0.031 (0.83)	0.55 (3.79)	1.10 (7.58)	0.31 (2.19)
	80-100 (24.4-30.5)	0.041 (0.93)	0.69 (4.91)	1.51 (10.41)	0.41 (2.83)
	100-120 (30.5-36.6)	0.051 (1.16)	0.82 (5.94)	1.85 (13.28)	0.55 (3.79)
	120-140 (36.6-42.7)	0.08 (1.81)	1.09 (7.58)	2.19 (15.62)	0.68 (4.91)
	140-160 (42.7-48.8)	0.11 (2.49)	1.43 (9.88)	2.36 (16.82)	0.72 (4.89)
	160-180 (48.8-54.9)	0.12 (2.71)	1.60 (11.03)	2.83 (20.20)	0.80 (5.62)
	180-200 (54.9-61.0)	0.17 (3.65)	1.75 (12.07)	3.43 (23.65)	0.88 (6.07)

NOTE 1: ELBOWS WITH ANGLES GREATER THAN 90° MUST NOT BE USED.

NOTE 2: THE TABLE DATA IS BASED ON THE FOLLOWING:  
 A. INITIAL FLOW CONDITIONS AT MAGNET INTERFERENCE.  
 B. GAS TEMPERATURE STARTING AT 4.5 KELVIN (-267° F OR -308° C).  
 C. HELIUM GAS FLOW RATE OF 2.337 CUBIC FEET (77.5 CUBIC METERS) PER MINUTE.  
 D. 45° STANDARD SWEEP ELBOW K = 15 F<sub>t</sub>.  
 E. 90° STANDARD SWEEP ELBOW K = 30 F<sub>t</sub>.  
 F. 45° LONG SWEEP ELBOW K = 15 F<sub>t</sub>.  
 G. 90° LONG SWEEP ELBOW K = 15 F<sub>t</sub>.

NOTE 3: THE TOTAL PRESSURE DROP OF THE ENTIRE CRYOGENIC VENT SYSTEM MUST BE LESS THAN 17 PSI (117.2 KPa). THE CALCULATION STARTS AT THE MAGNET VENT INTERFERENCE AND ENDS AT THE TERMINATION POINT OUTSIDE THE BUILDING.

NOTE 4: FOR 14 IN. (356mm) AND 16 IN. (406mm) VENT PIPE DIAMETERS REFER TO PRE-INSTALLATION MANUAL REFERENCED ON SHEET C1.



### WATER COOLING SPECIFICATIONS

MECH-07

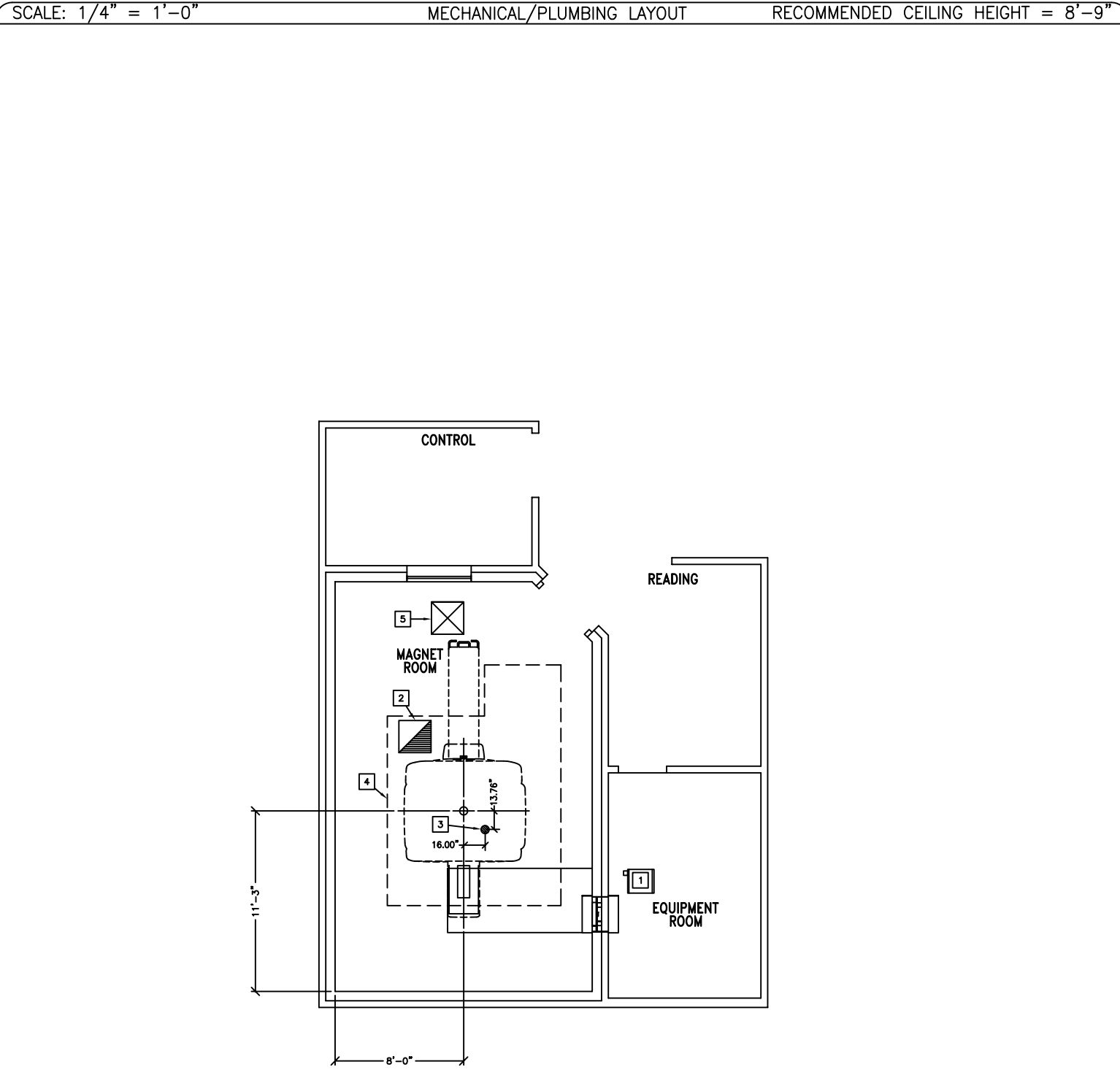
REV. DATE: 03/05/09

A CLOSED LOOP WATER COOLING SYSTEM IS REQUIRED FOR THE SHIELD COOLER COMPRESSOR. OPEN LOOP CITY WATER IS UNACCEPTABLE.

EQUIPMENT	INLET TEMPERATURE RANGE °F (°C)	INLET PRESS. psi (KPa)	RECOMMENDED FLOW RATE gal/min (liter/min)	PRESS. DROP psi (KPa)	TEMPERATURE RISE ΔT °F (°C)	TYPICAL HEAT OUTPUT BTU/hr (WATTS)	MAXIMUM HEAT OUTPUT BTU/hr (WATTS)
SHIELD/CRYO COOLER COMPRESSOR	38.2-82.4 (4-28)	MIN 29(200)	MINIMUM 1.1 (4)	AT MIN FLOW RATE 9.5 (65.5)	AT MIN FLOW RATE 48.4 (26.9)	25590 (7500)	28320* (8300)
		MAX 100(690)	MAXIMUM 2.6 (10.0)	AT MAX FLOW RATE 49 (337.8)	AT MAX FLOW RATE 19.4 (10.8)		

NOTES:  
 \* ENSURE WATER COOLING SYSTEM CAPACITY IS CAPABLE OF DISSIPATING MAXIMUM HEAT OUTPUT.  
 \*\* THESE WATER COOLING SPECIFICATIONS ARE THE REQUIREMENTS AT THE EQUIPMENT. THE COOLING SYSTEM DESIGN MUST HAVE ALLOWANCES FOR PRESSURE/TEMPERATURE CHANGES DUE TO DISTANCE THE CHILLER IS LOCATED FROM THE EQUIPMENT.

- PRESSURE DROP AND WATER TEMPERATURE RISE ACROSS EQUIPMENT IS GIVEN FOR MINIMUM AND MAXIMUM RECOMMENDED FLOW RATES AS INDICATED. PRESSURE DROP IS MEASURED BETWEEN COOLANT INLET AND OUTLET AT COMPRESSOR UNIT.
- WATER FLOWMETER KIT (46-2946261) IS AVAILABLE TO CHECK/MONITOR FLOW RATE FOR THE SHIELD COOLER COMPRESSOR. ADD 2 psi TO TOTAL SYSTEM PRESSURE DROP IF FLOWMETER IS PERMANENTLY INSTALLED IN SYSTEM.
- RECOMMEND A FLOWMETER BE PERMANENTLY INSTALLED IN SYSTEM, INCLUDE FLOWMETER DROP IN TOTAL SYSTEM PRESSURE DROP.
- SHIELD COOLER COMPRESSOR WATER FLOW RATE IS BASED ON INLET WATER TEMPERATURE OF 82.4° F (28° C). LOWER TEMPERATURE PERMITS LOWER FLOW. SEE DETAIL M16-15E FOR GRAPHIC WATER TEMPERATURE AND FLOW RATE ADMISSIBLE RANGE.
- MINIMUM FLOW RATE IS FOR CLEAN WATER WITHOUT ANTI-FREEZE. MAXIMUM FLOW RATE IS ANY MIXTURE OF WATER/ANTI-FREEZE.
- WATER FLOW RATE AND TEMPERATURE RISE VALUE ARE BASED ON WATER. LABORATORY GRADE ETHYLENE GLYCOL OR PROPYLENE GLYCOL ANTI-FREEZE MAY BE USED (DO NOT MIX ETHYLENE GLYCOL WITH PROPYLENE GLYCOL). PREFERRED CONCENTRATION IS 65% WATER AND 35% GLYCOL TO MINIMIZE ORGANIC GROWTH. CONCENTRATION OF 50/50 IS ACCEPTABLE WITH A DERRATE OF 0.8 IN SPECIFIC HEAT CALCULATIONS AND A 20% INCREASE IN FLOW WITH A RESULTANT INTERNAL PRESSURE INCREASE OF 40%.
- PRESSURE DROP VALUES BASED ON NEW SYSTEM, MAY RISE DUE TO CALCULATION.
- SHIELD/CRYO COOLER TEMPERATURE RISE, TYPICAL AND MAXIMUM HEAT OUTPUT ARE REDUCED BY 18% AT 50 Hz OPERATION.
- WATER COOLING CIRCUIT TYPICAL VALUES: - WATER INLET FLOW 1.8 TO 2.1 GPM/MINUTE (7 TO 8 LITER/MINUTE)  
 - WATER INLET TEMPERATURE 53.6 TO 59° F (12 TO 15°C)  
 - THERE IS A RISK OF DAMAGING THE SHIELD/CRYO COOLER COMP. WITH WATER INLET LOW TEMPERATURE AND LOW FLOW RANGE.



### MECHANICAL/PLUMBING ITEMS

CUSTOMER/CONTRACTOR SUPPLIED AND INSTALLED ITEMS

ITEM NO.	ITEM DESCRIPTION (* INDICATES EXISTING)
1	(2) 1/2" [13 mm] I.D. HIGH PRESSURE HOSES AND (4) 1" [25 mm] COMPRESSION CLAMPS 150 MICRON FILTER, SHUT OFF VALVES AND BY-PASS VALVE AS REQUIRED. SEE DETAIL MECH-06. WATER QUALITY MUST BE 6.5-88 PH, A HARDNESS OF LESS THAN 800 PPM, SUSPENDED MATTER OF 10 mg PER LITER AND LESS THAN 150 MICRON PARTICLE SIZE. ANTI-FREEZE MINIMUM OF 25 PER CENT. MAXIMUM OF 50 PER CENT BY VOLUME. FOR WATER SPECIFICATIONS SEE DETAIL MECH-07 AND EQUIPMENT DETAIL M16-15E ON THE EQUIPMENT DETAIL SHEETS.
2	EXHAUST FAN AND AIR INLET MUST BE SIZED FOR A MINIMUM OF 1200 CFM (34 M <sup>3</sup> /MINUTE) AND A MINIMUM OF 18 AIR EXCHANGES PER HOUR. SEE DETAIL ELEC-55 ON THE ELECTRICAL DETAIL SHEET(S). MAGNET ROOM EXHAUST FAN INTAKE VENT MUST BE LOCATED AT THE HIGHEST CEILING PLANE NEAR THE MAGNET CRYOGEN VENT.
3	REFER TO PRE-INSTALLATION MANUAL LISTED ON SHEET C1 FOR CRYOGEN VENT REQUIREMENTS. SEE SHEET S-2 FOR CRYOGEN VENT LOCATION. 8" (203 mm) CRYOGEN VENT - TOLERANCE FOR VENT LOCATION ±0.25" (6 mm). SEE DETAILS MECH-04 AND MECH-01. THE CUSTOMER'S DESIGNER IS RESPONSIBLE FOR SELECTING VENT MATERIALS AND HARDWARE CAPABLE OF SAFELY HANDLING THE PRESSURES AND COLD TEMPERATURE GENERATED WITHIN THE VENT AT EACH MRI SITE. THE CUSTOMER'S CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING THE CRYOGEN VENT FROM THE MAGNET VENT ADAPTER TO THE BUILDING'S EXTERIOR. FOR NON-STANDARD VENT CONFIGURATIONS (I.E. OFFSET CEILING EXITS, WALL EXITS, AND GEODESIC DOMES) THE CUSTOMER'S CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE CRYOGENIC VENT SYSTEM AND VENT SUPPORTS WITHIN THE MAGNET ROOM.
4	MINIMUM CEILING HEIGHT REQUIREMENT AREA. REFER TO MAGNET EQUIPMENT DETAILS FOR MORE INFORMATION.
5	MINIMUM 8 FT. x 8 FT. (0.61m x 0.61m) PRESSURE EQUALIZING WAVEGUIDE VENT IN THE MAGNET ROOM CEILING.

### MECHANICAL/PLUMBING NOTES

ALL PIPING, FITTINGS, SUPPORTS, HOSES, CLAMPS, VENTILATION SYSTEMS, ETC. ARE TO BE SUPPLIED AND INSTALLED BY THE CUSTOMER OR HIS CONTRACTORS.

FOR COMPLETE DESIGN AND IS REQUIREMENTS, SPECIFICATIONS AND GUIDELINES REFER TO THE PRE-INSTALLATION MANUAL REFERENCED ON SHEET C1 FOR:  
 MR SYSTEMS - SYSTEM COOLING, CRYOGEN VENTING, WAVEGUIDES AND EXHAUST VENTING.  
 CYCLOTRON SYSTEMS - CHEMISTRY LINES, GAS LINES, AND SYSTEM COOLING.

PROJECT TITLE: MECHANICAL LAYOUT  
 MODALITY TYPE: 1.5T SIGNA HDX

THIS PLAN IS SUBMITTED TO SUGGEST LOCATION OF GE HEALTHCARE EQUIPMENT. IN PREPARING THIS PLAN, EVERY EFFORT HAS BEEN MADE TO CONFORM TO THE ACTUAL EQUIPMENT EXPECTED TO BE INSTALLED. IT IS NOT TO BE USED FOR RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

REVISION HISTORY:

PROJECT	REVISION
8-206f	03

DATE: 11 JAN 12  
 DRAWN BY: PMM  
 CHECKED BY: TMS

SHEET M1

THIS SHEET IS PART OF THE DOCUMENT SET LISTED ON SHEET C1 AND SHOULD NOT BE SEPARATED

GE Healthcare  
 IS Services Design Center  
 Milwaukee, Wisconsin

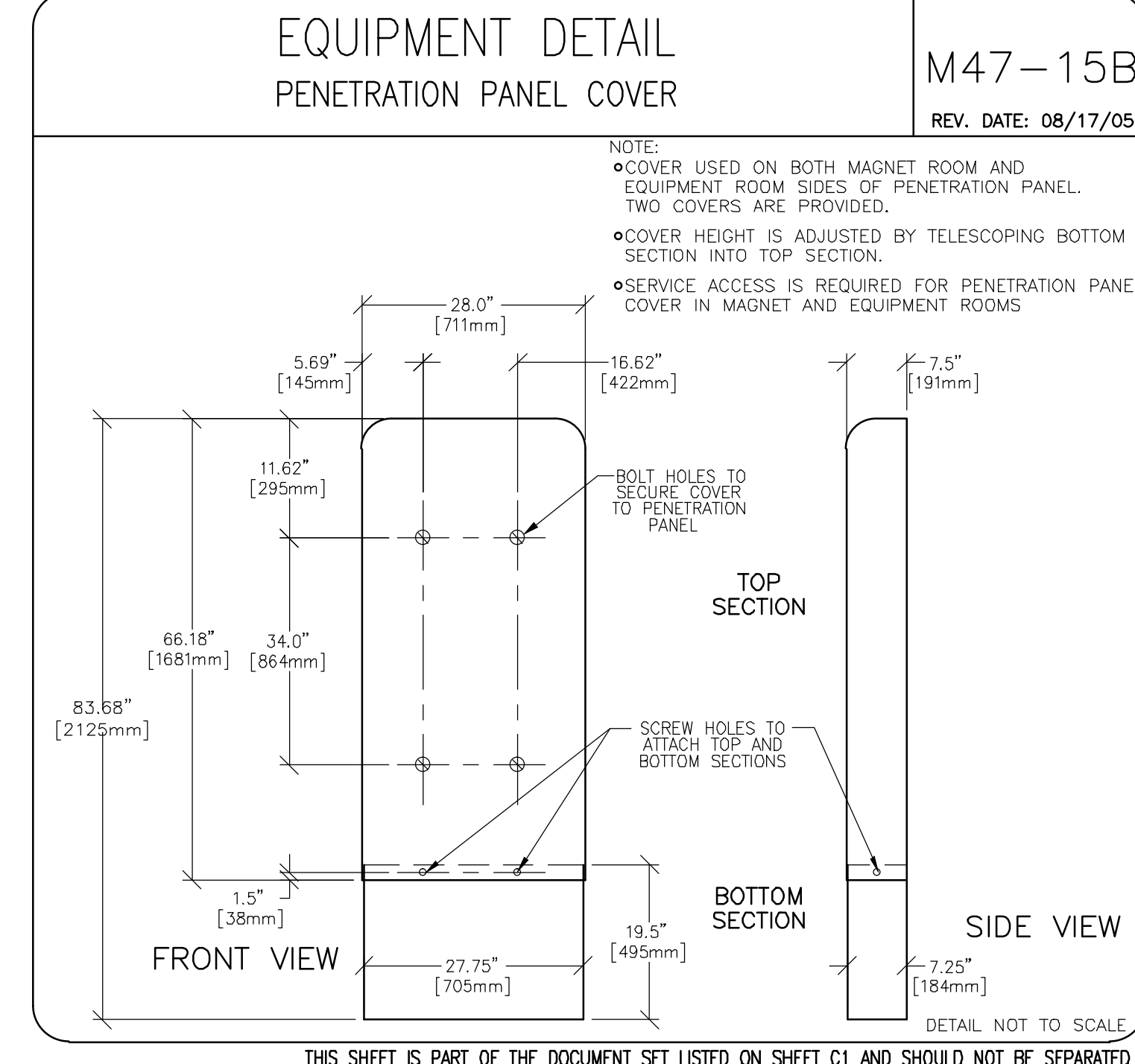
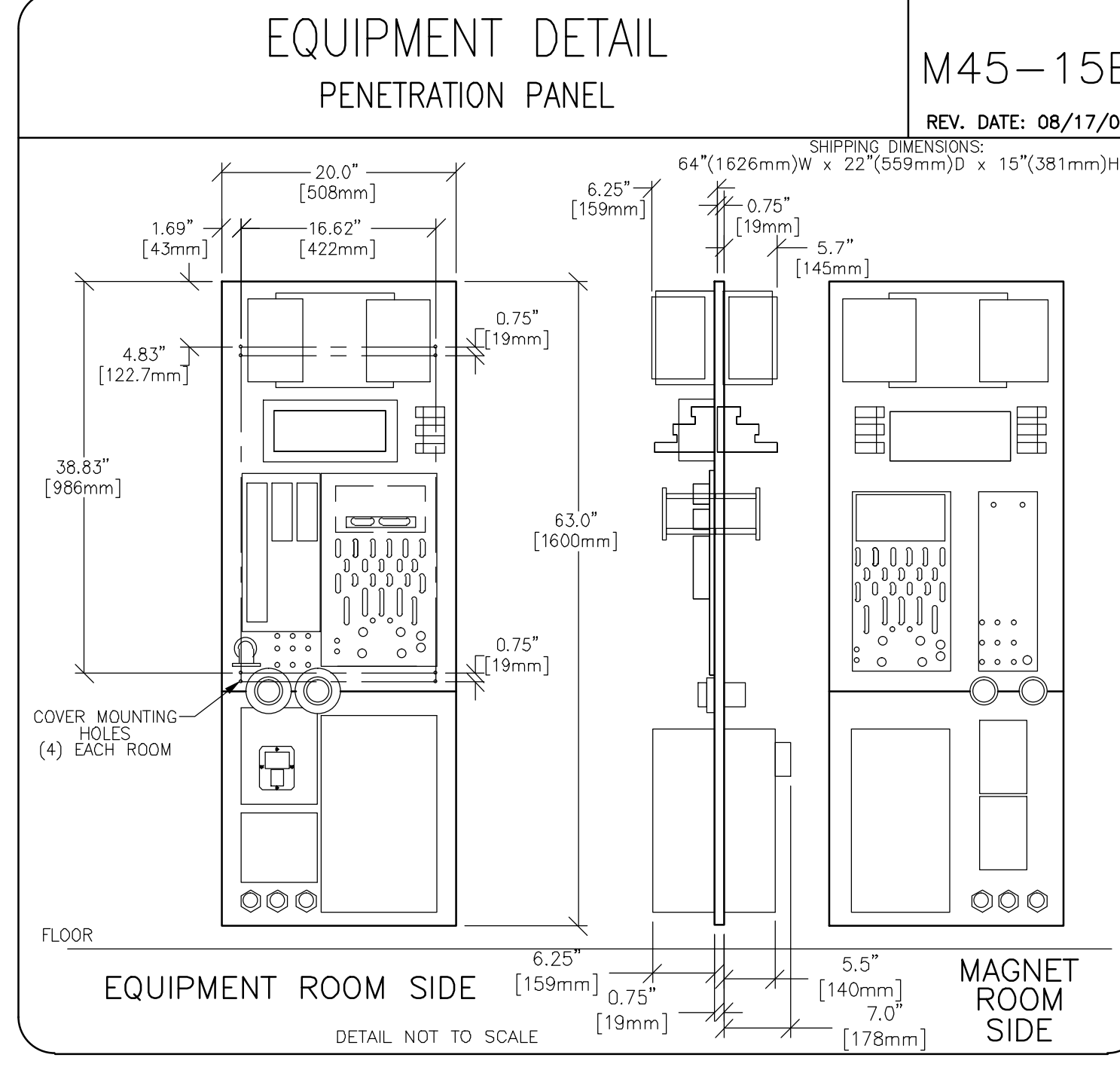
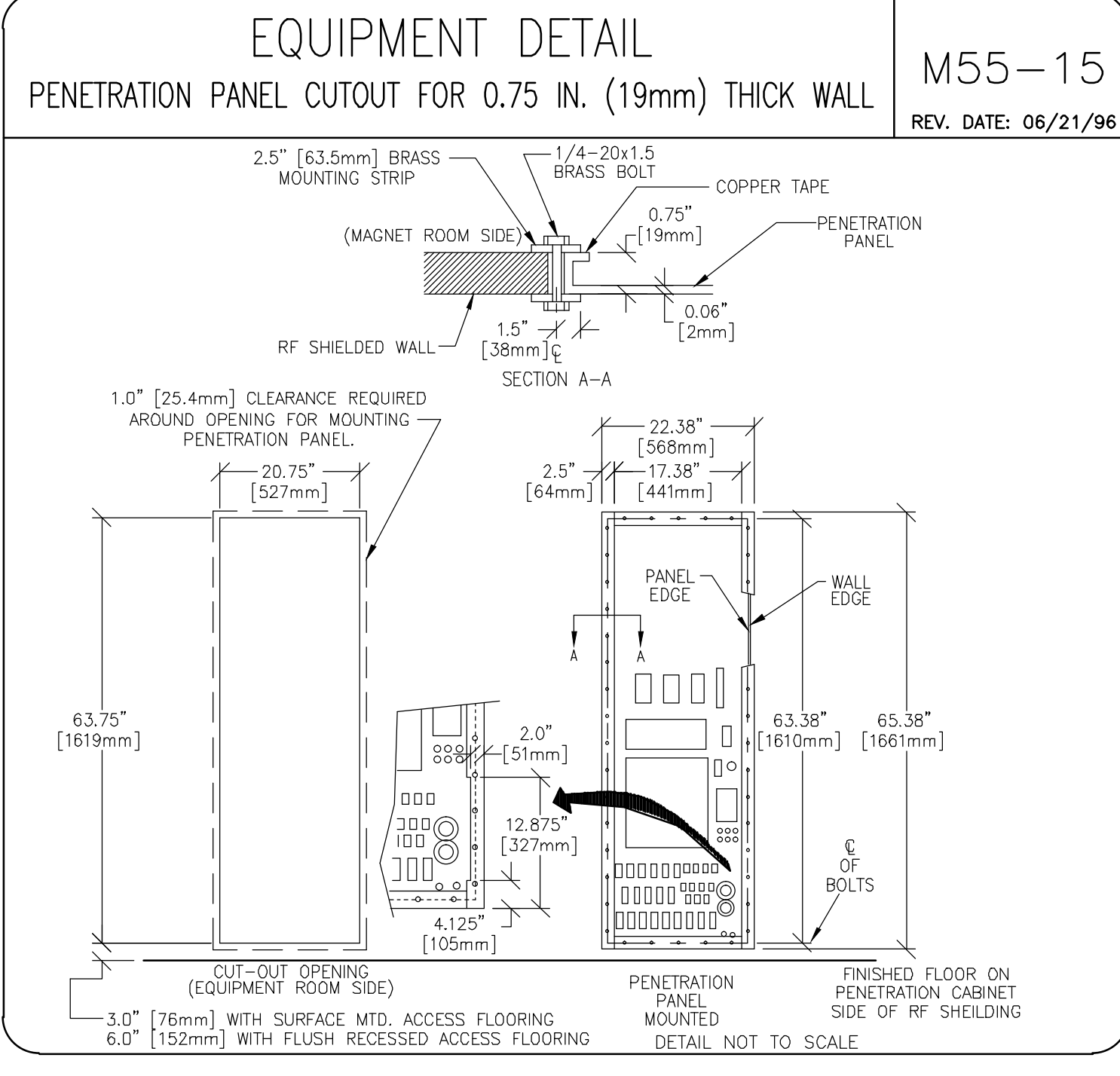
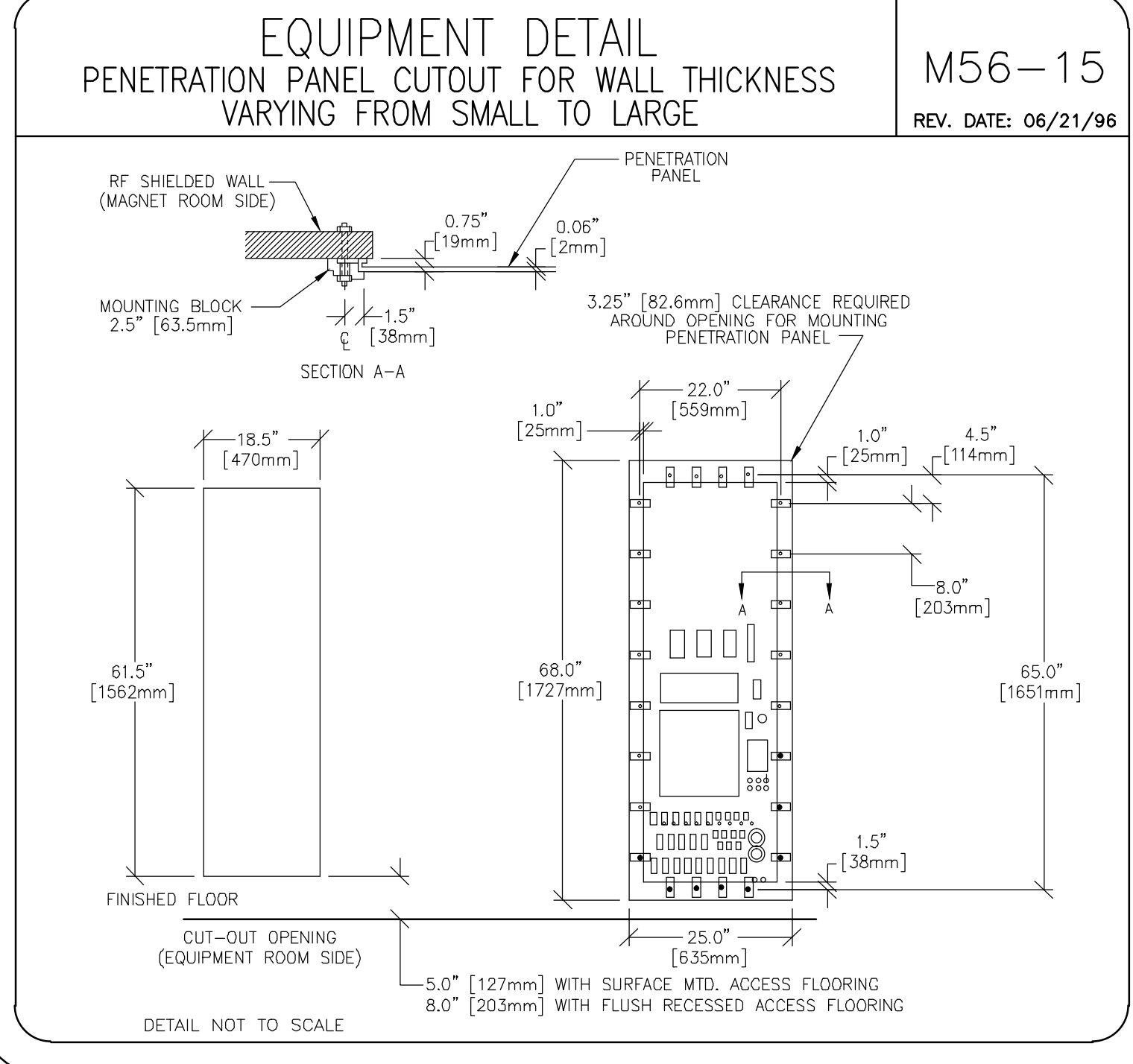
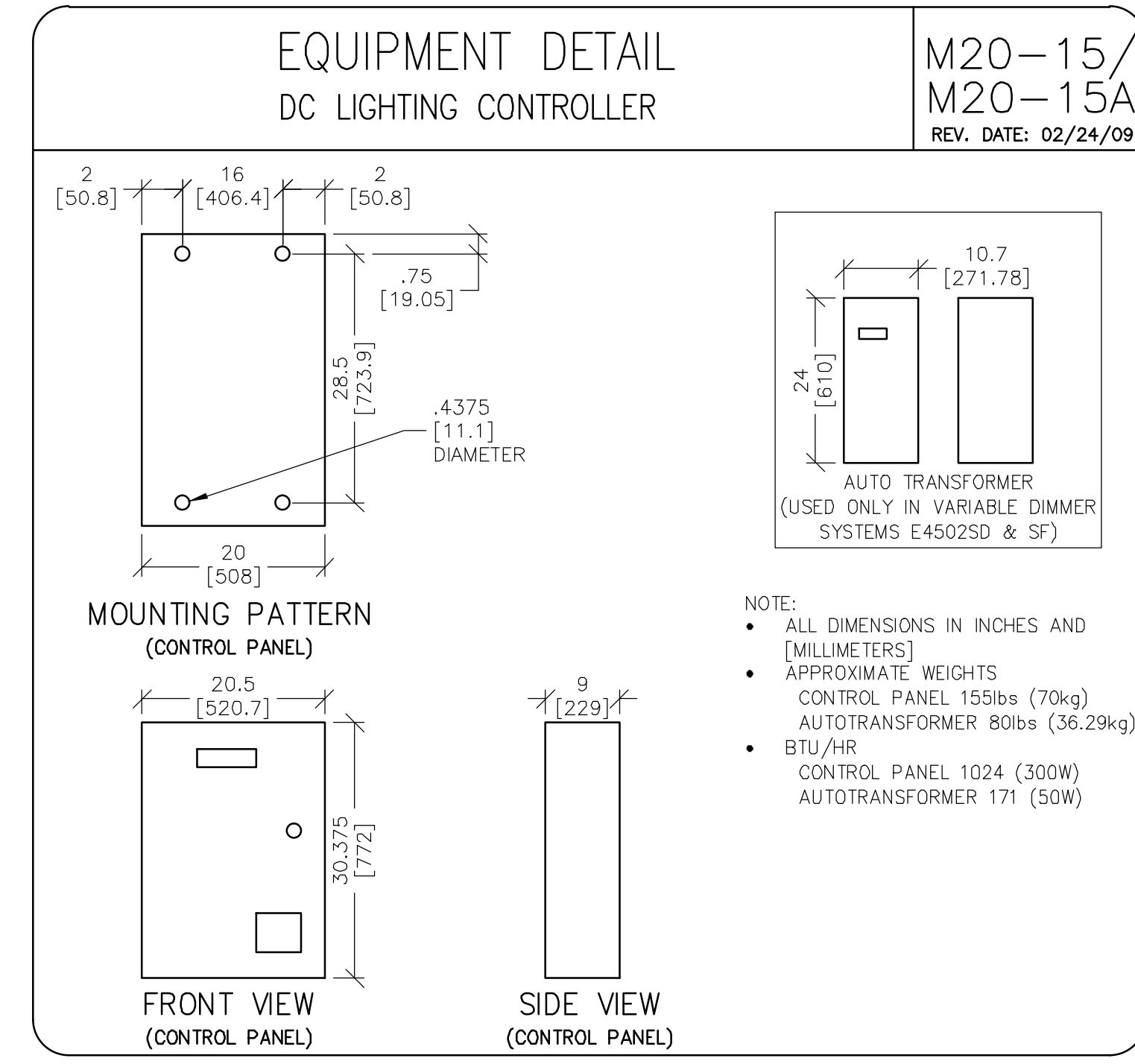
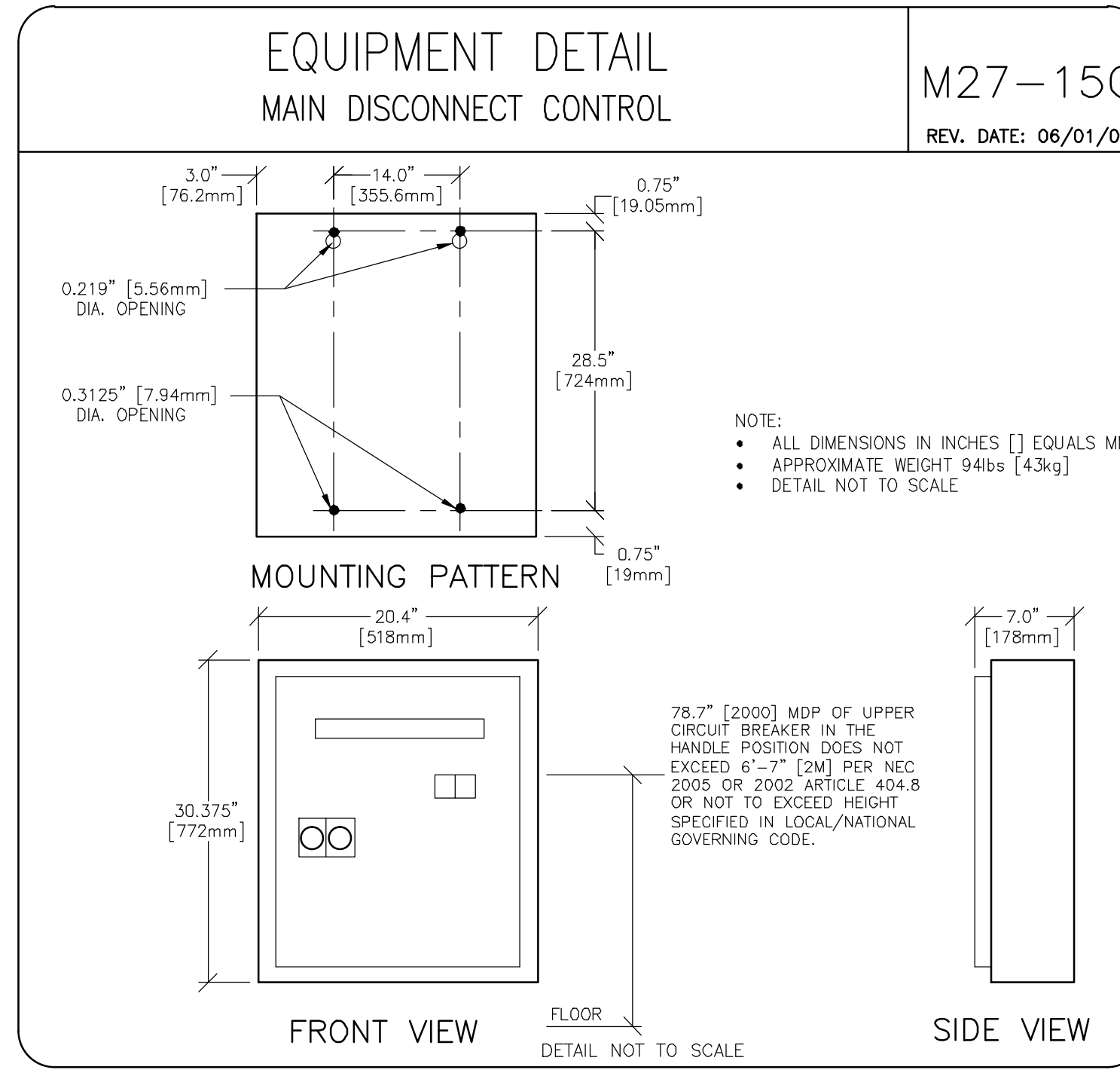
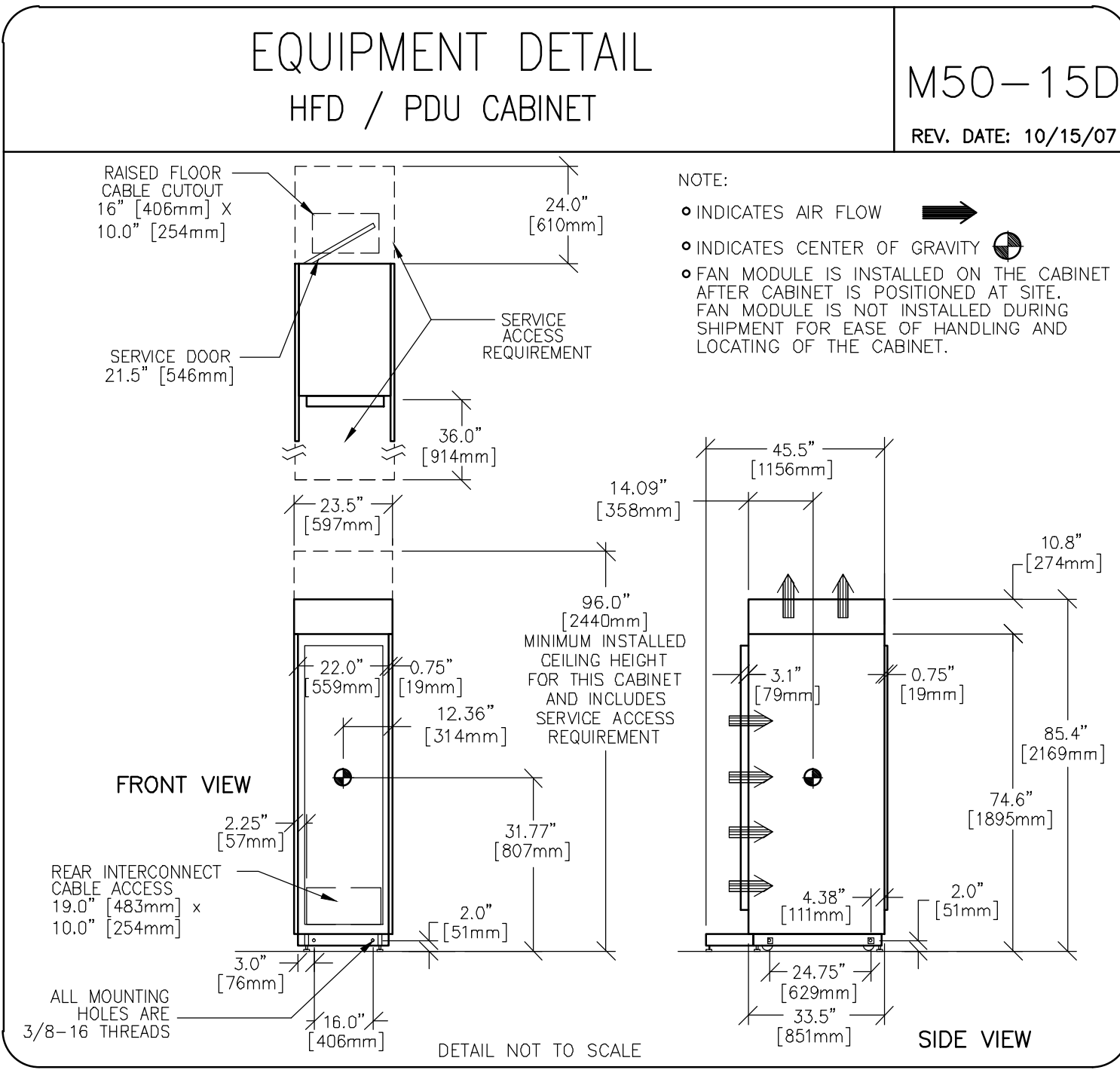
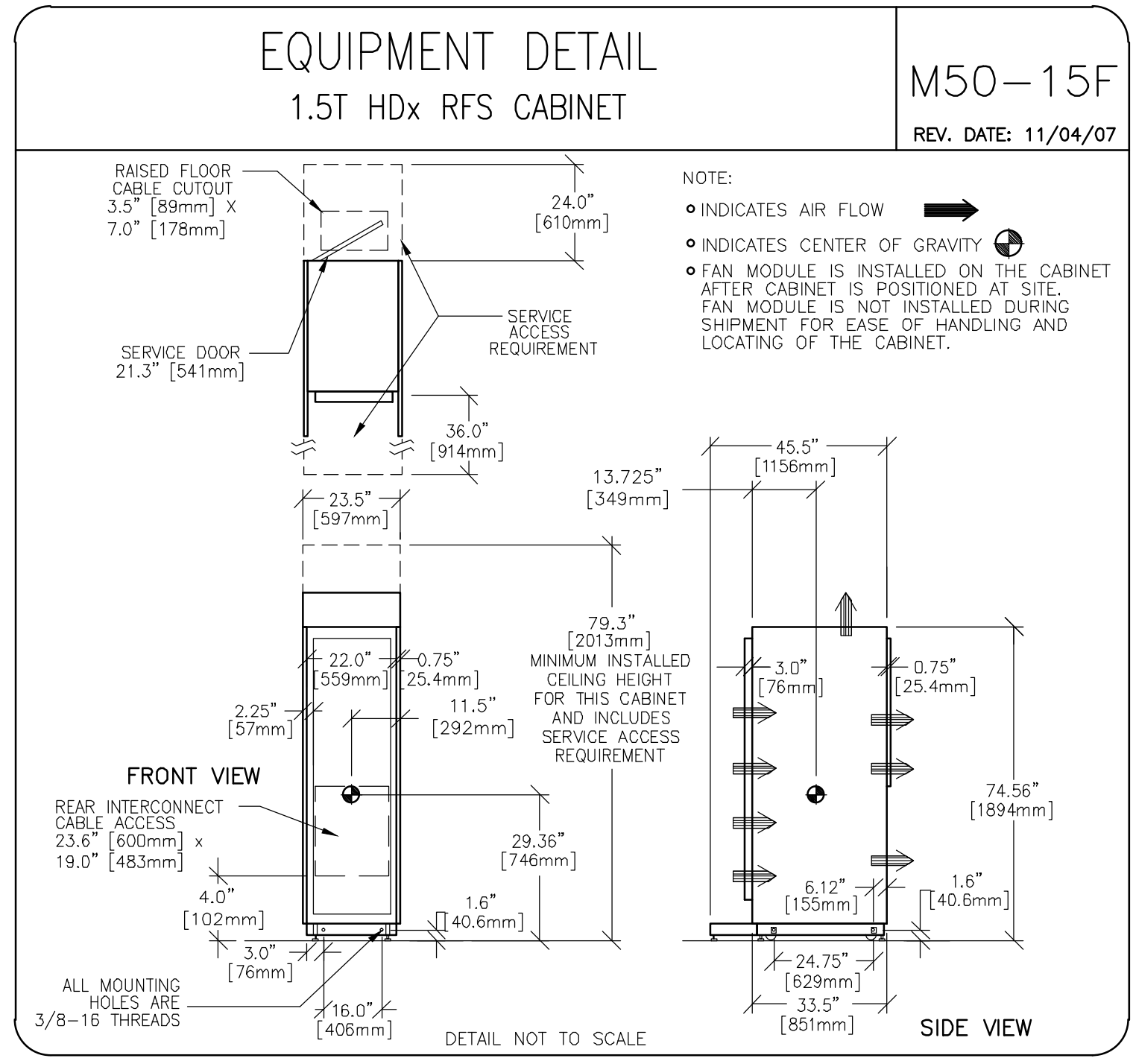
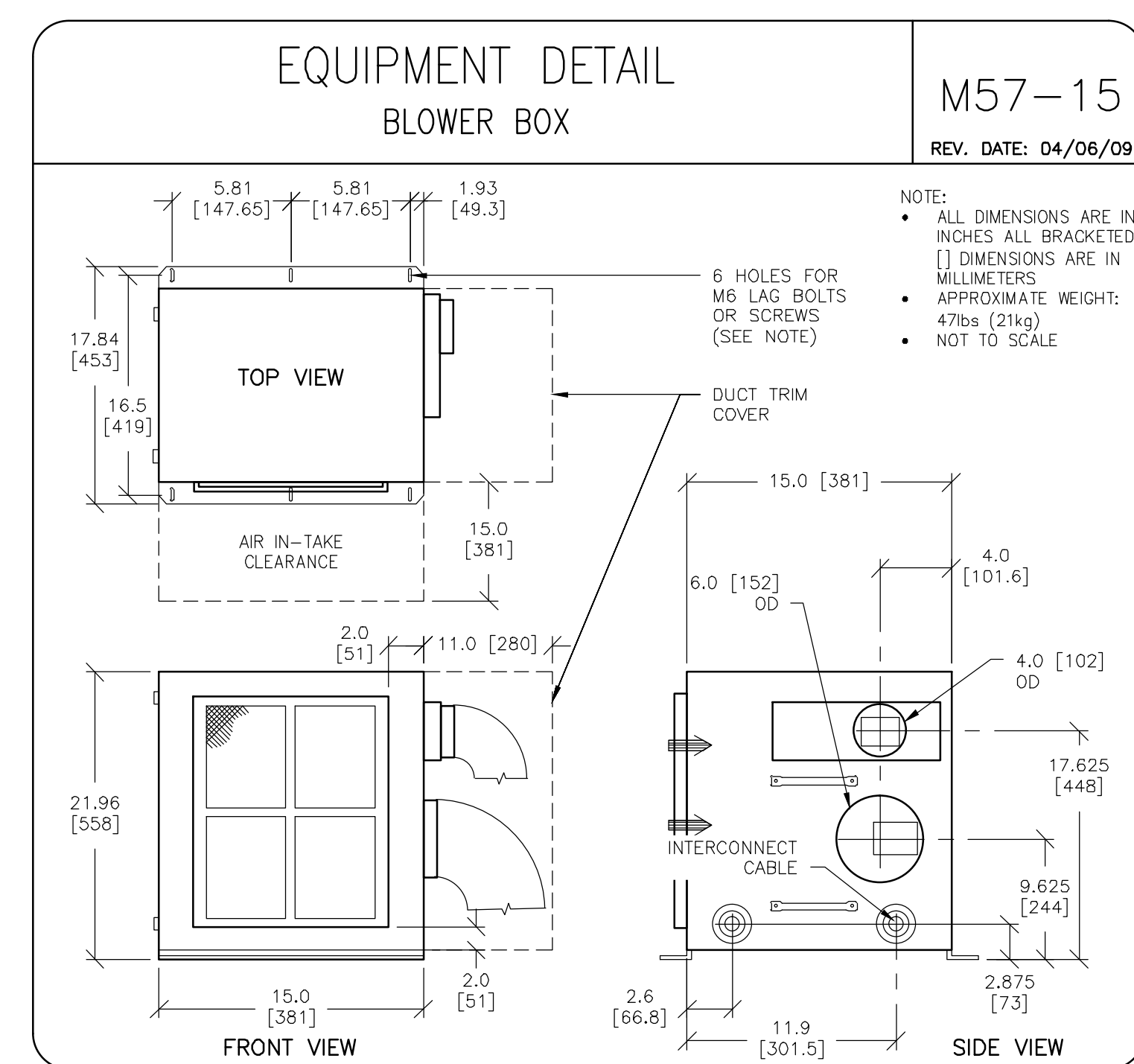
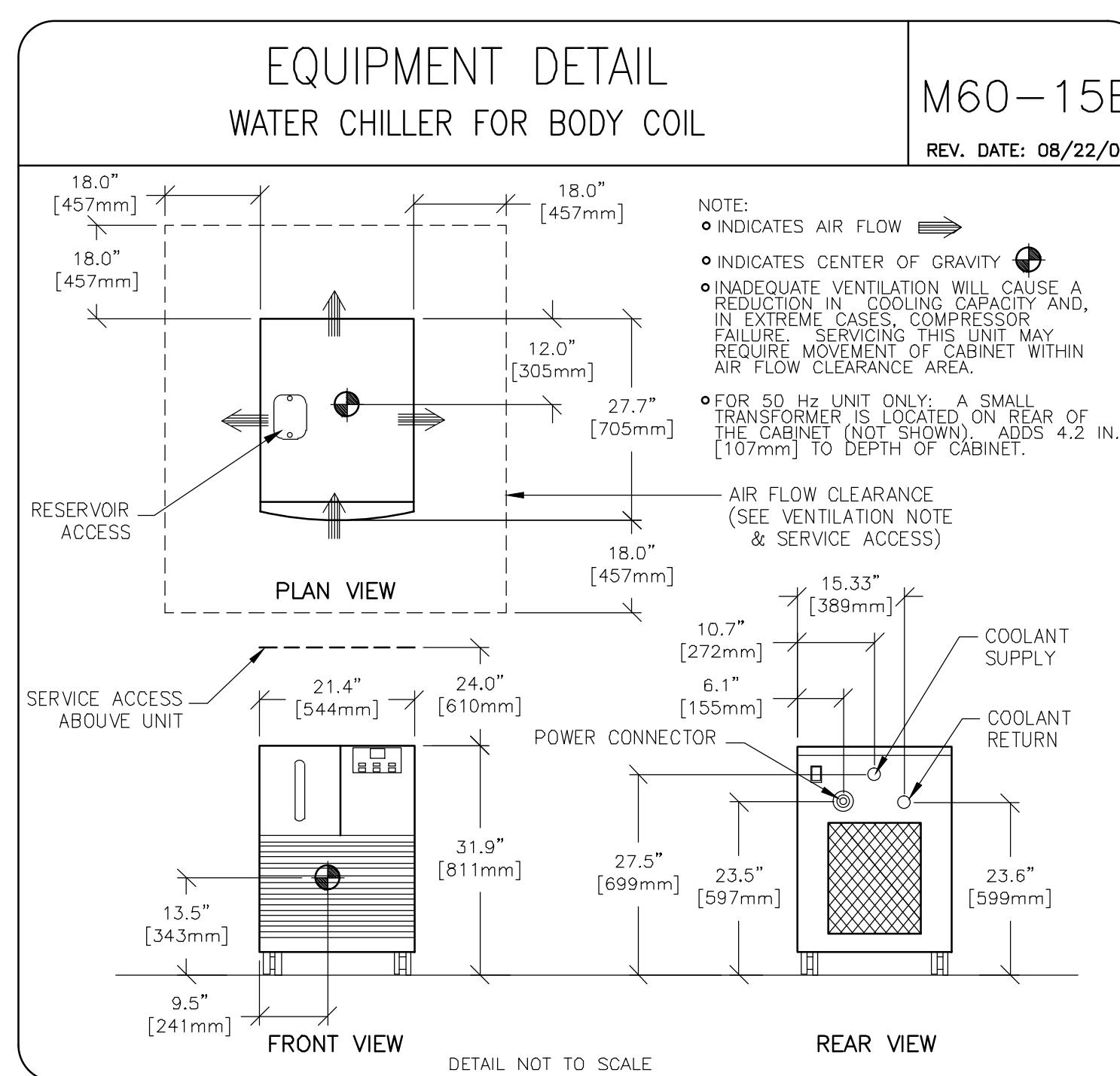
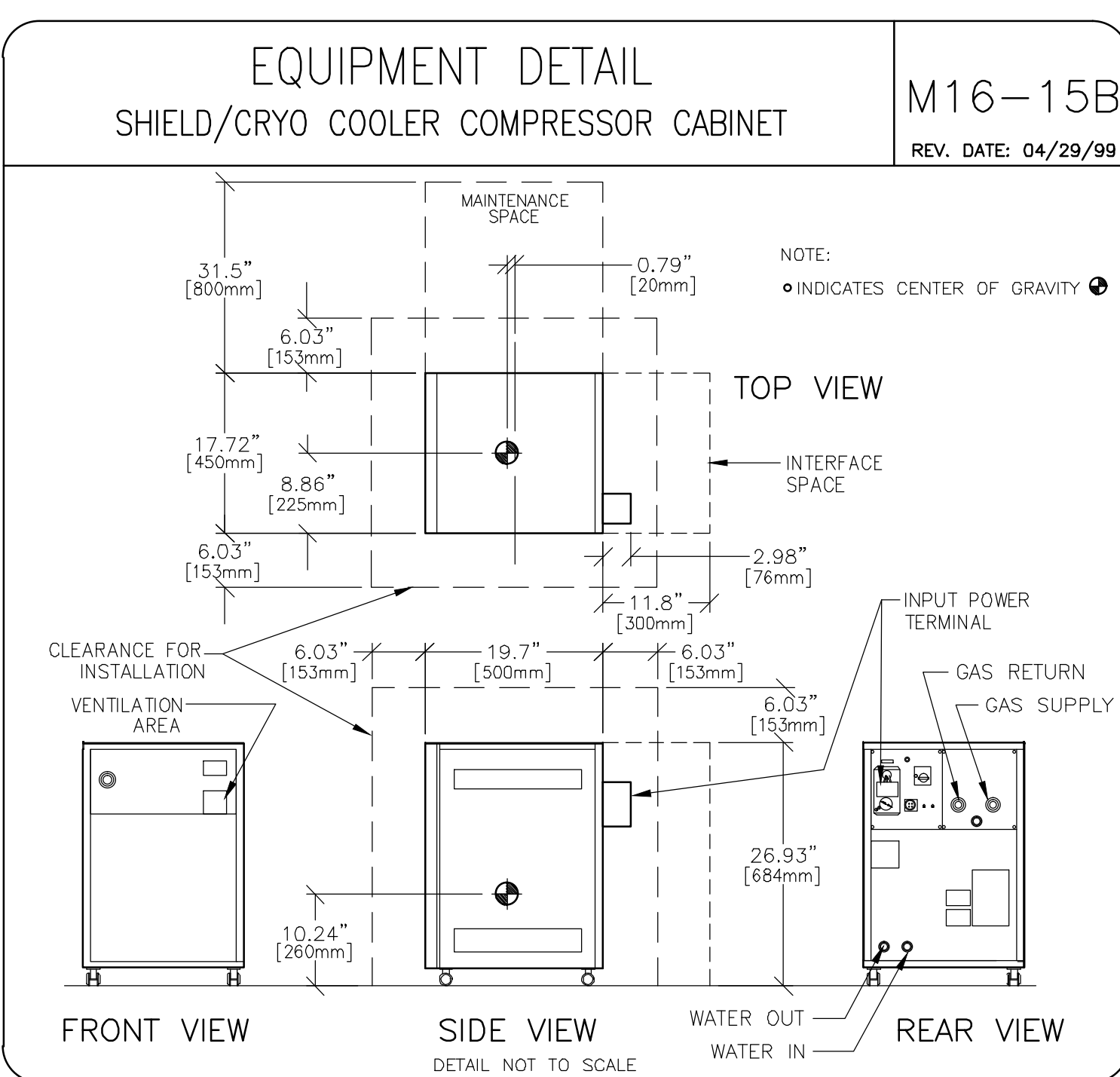
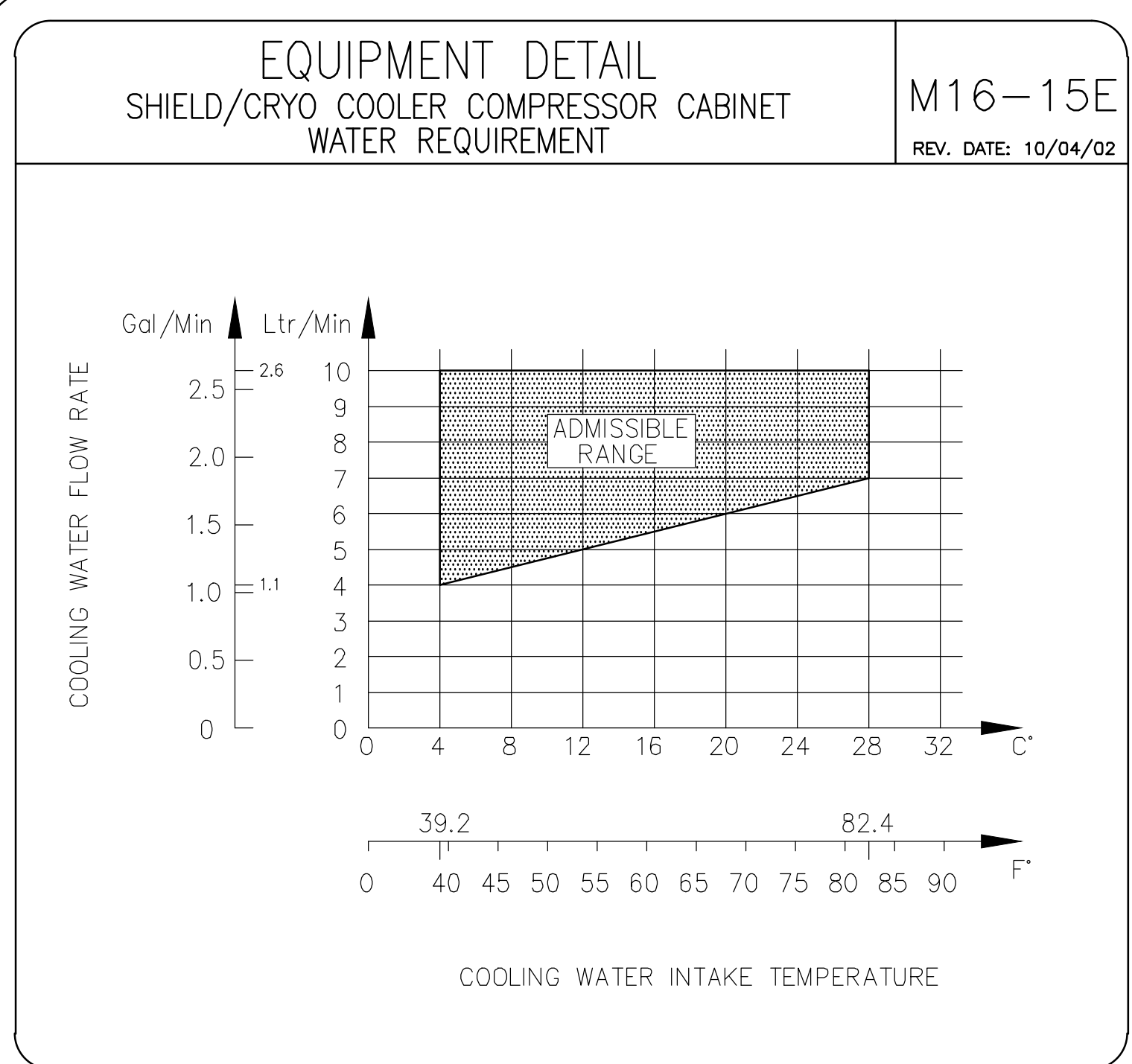
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 MODALITY TYPE: 1.5T SIGNA HDX

8-206f  
 TYPICAL LAYOUT

REVISION HISTORY:

SHEET M1





GE Healthcare

IS Services Design Center  
Milwaukee, Wisconsin

SHEET TITLE: EQUIPMENT DETAILS  
MODALITY TYPE: 1.5T SIGNA HDx

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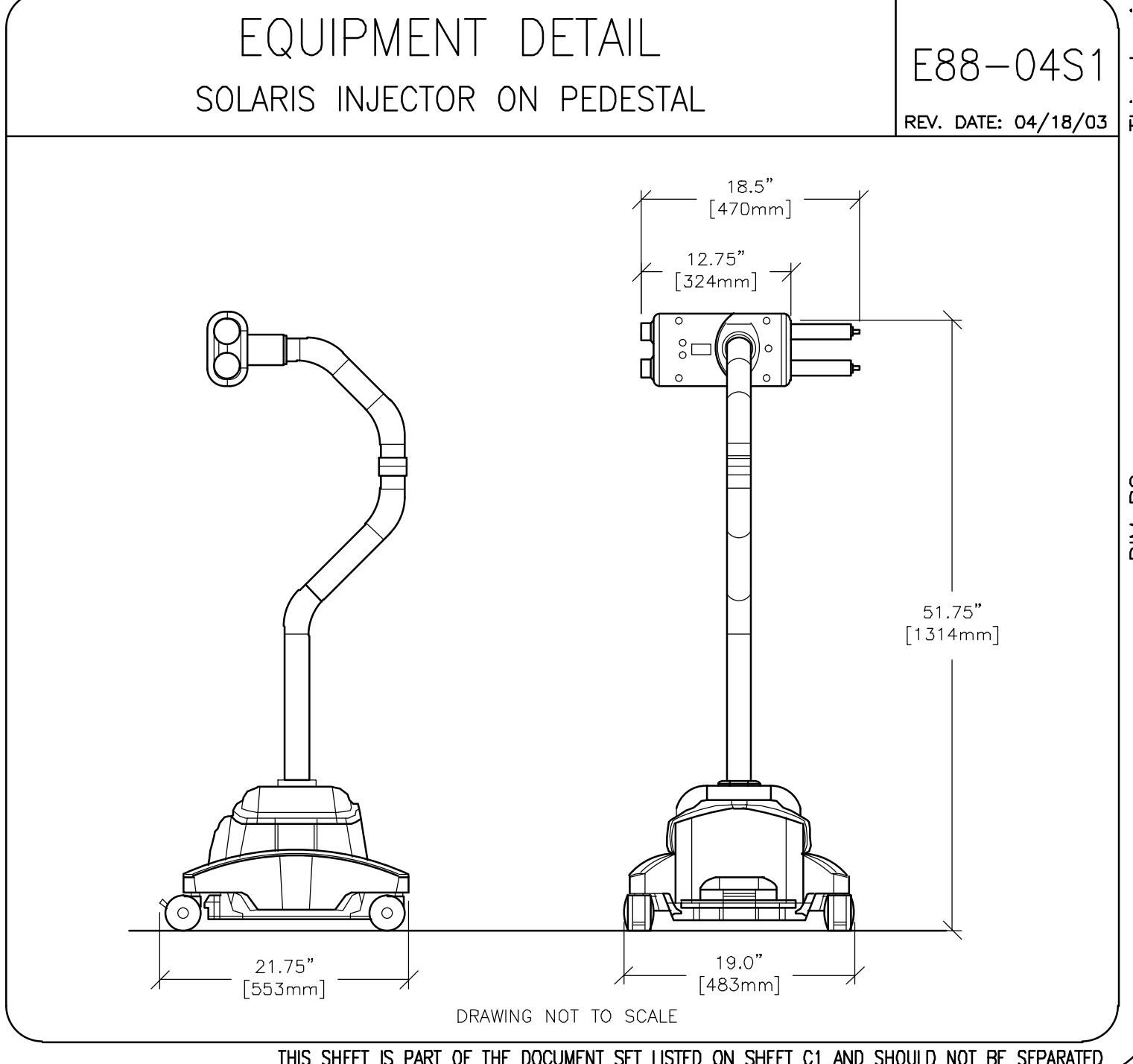
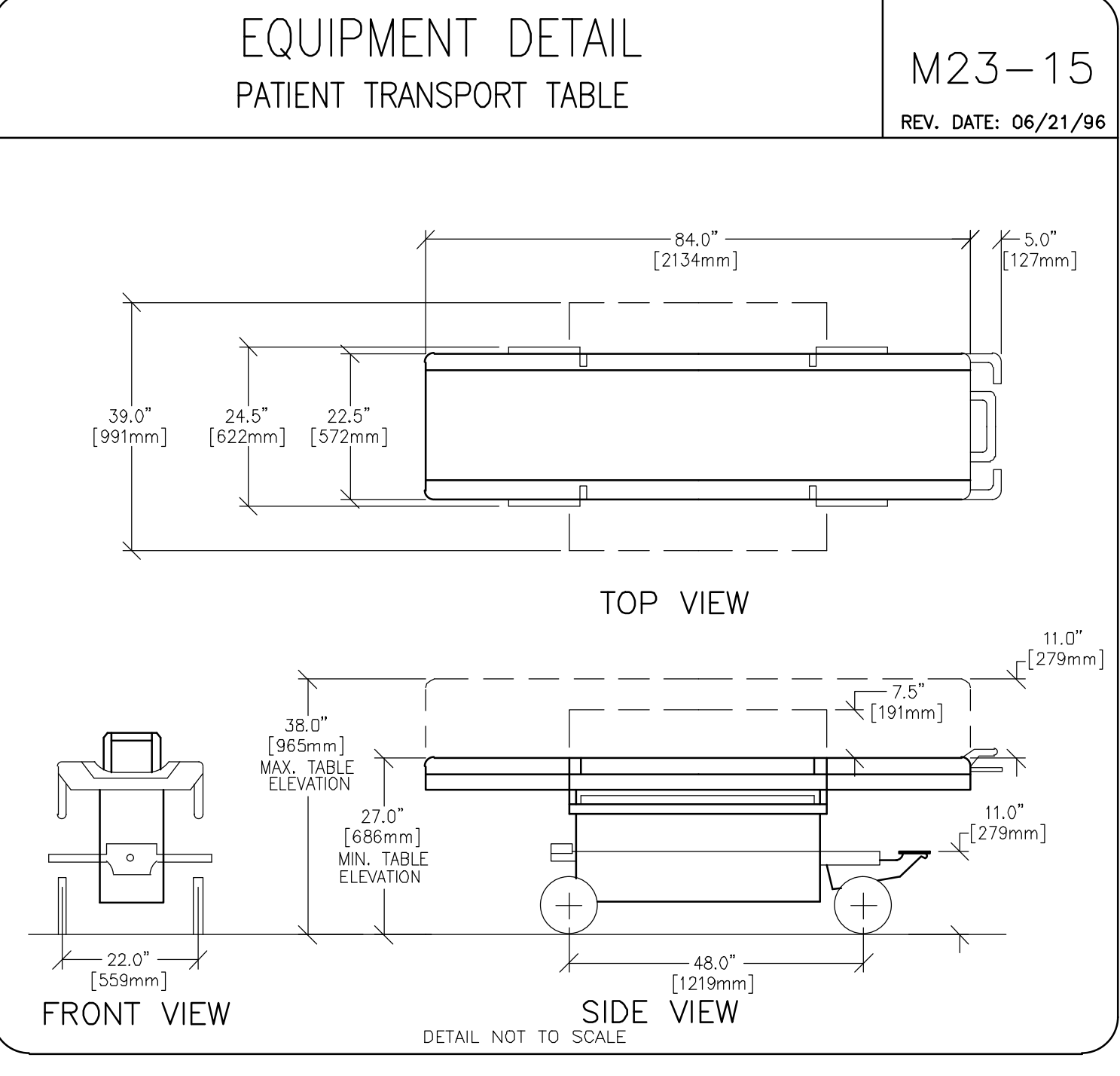
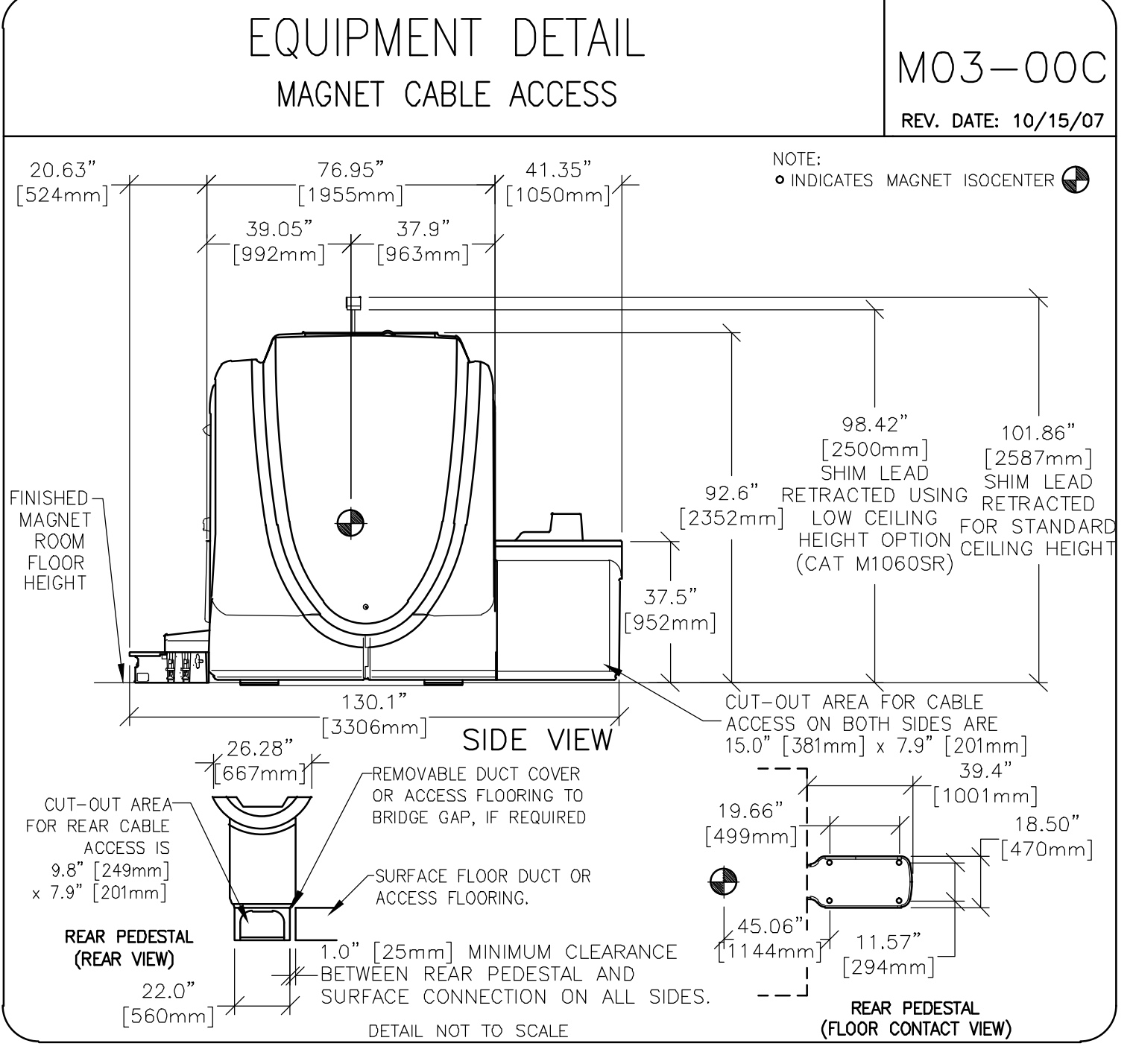
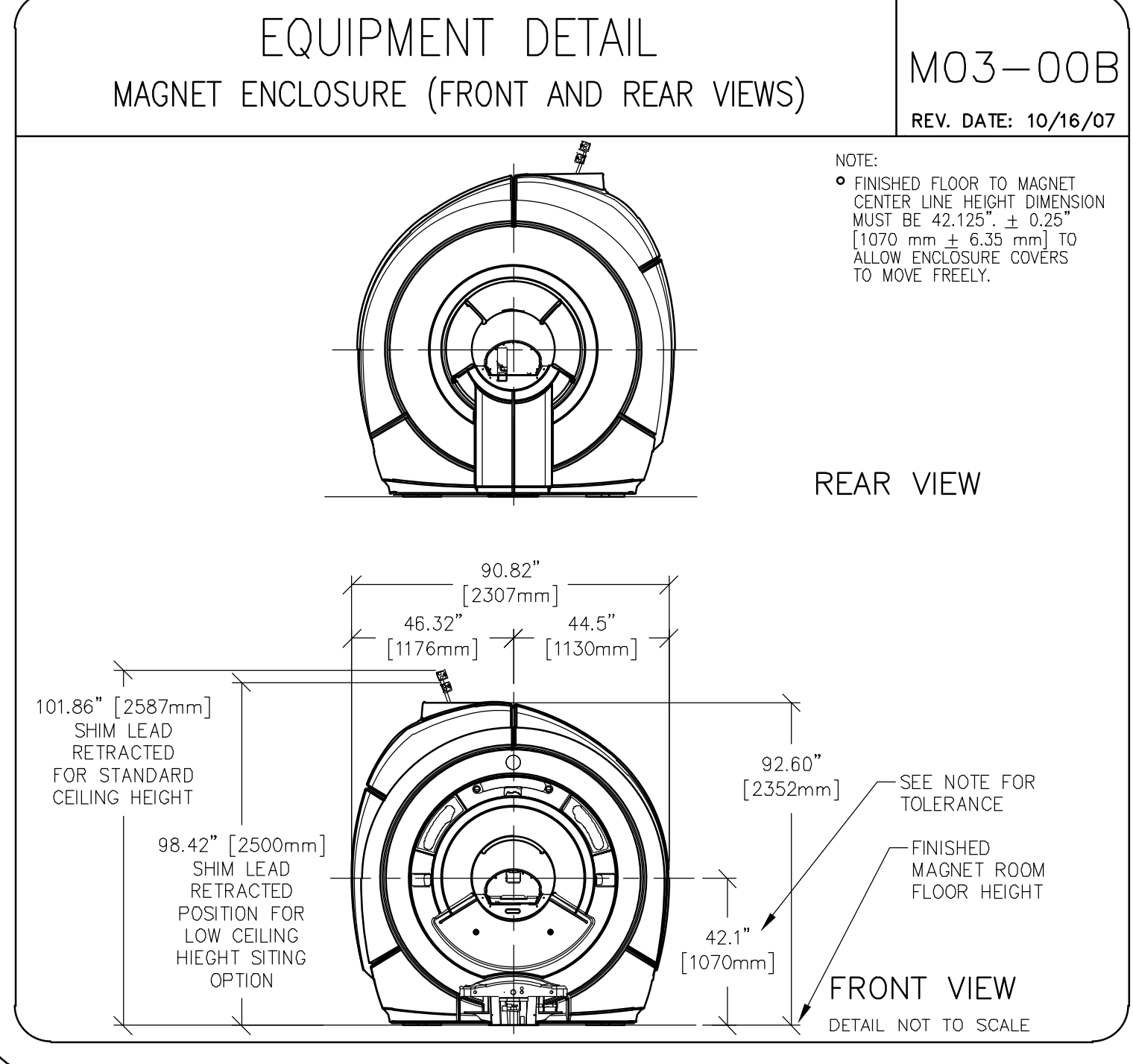
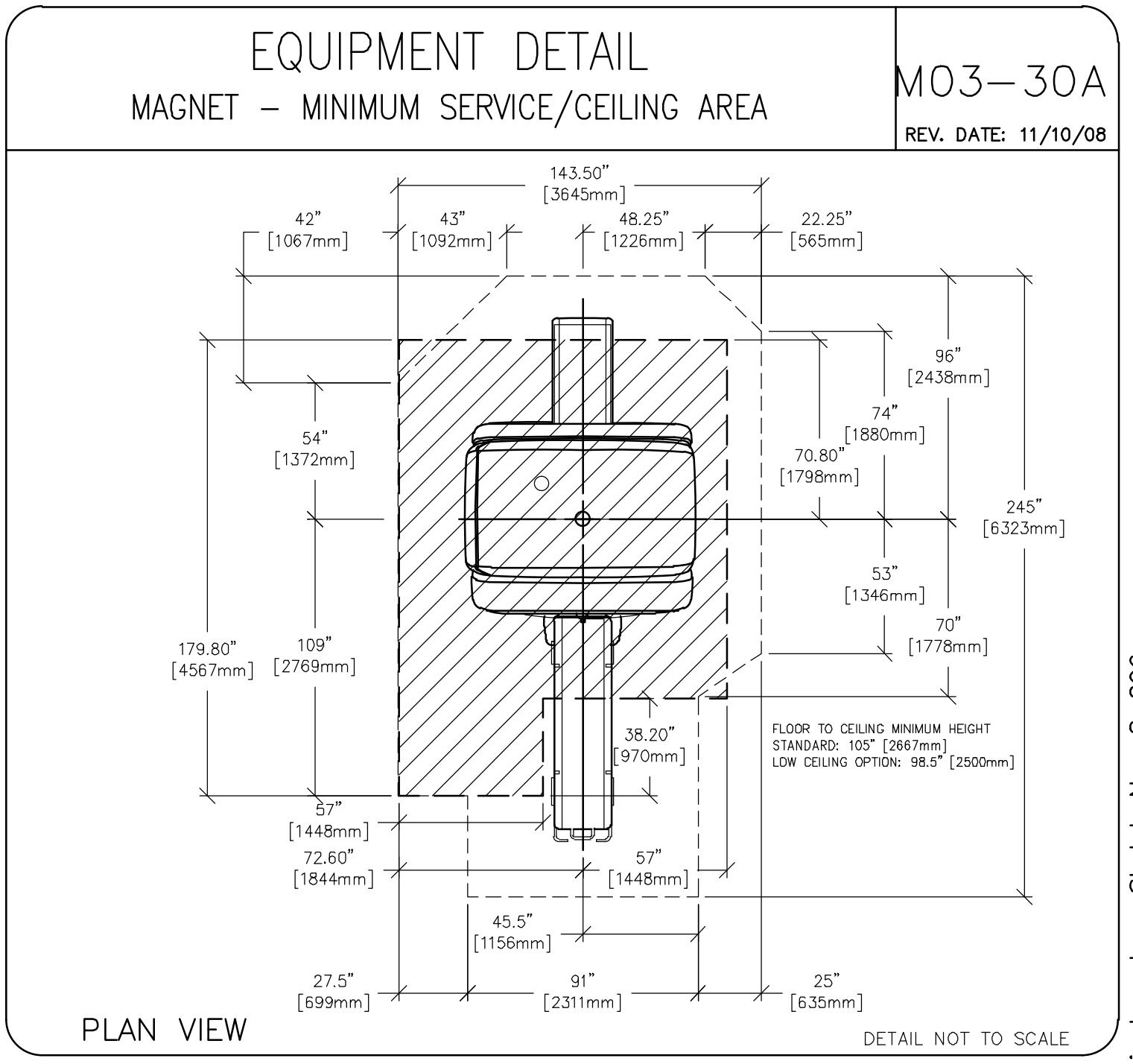
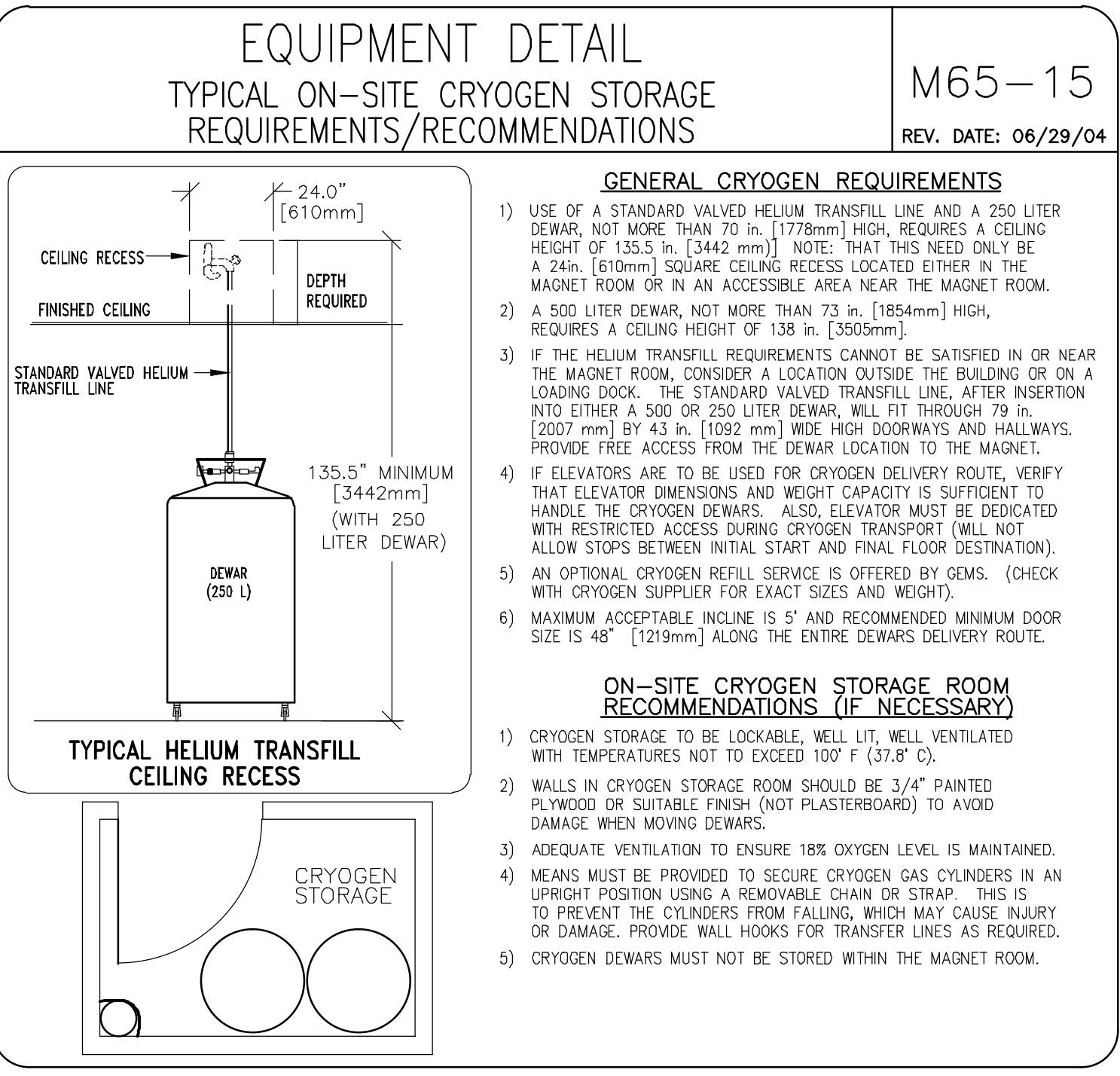
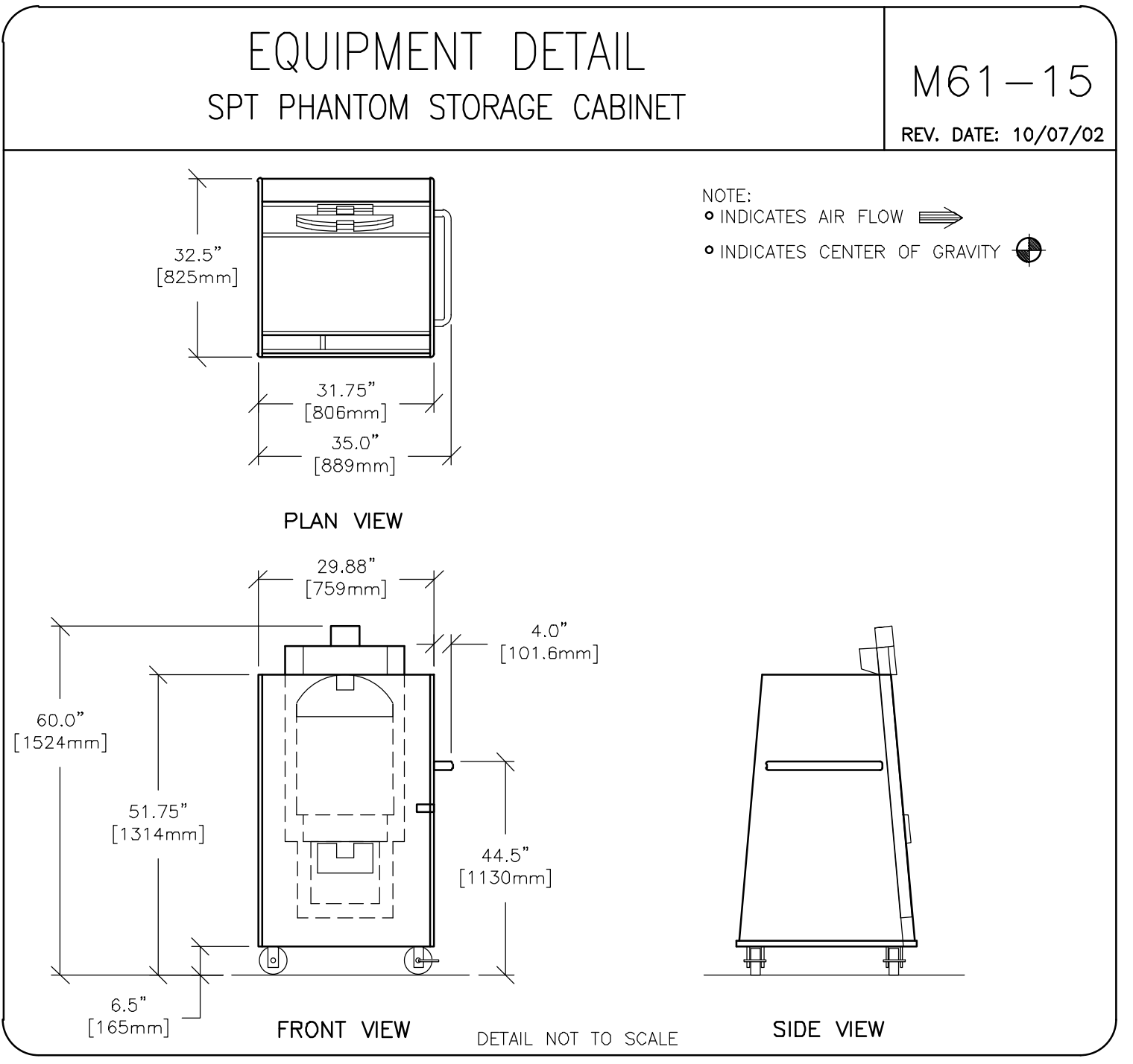
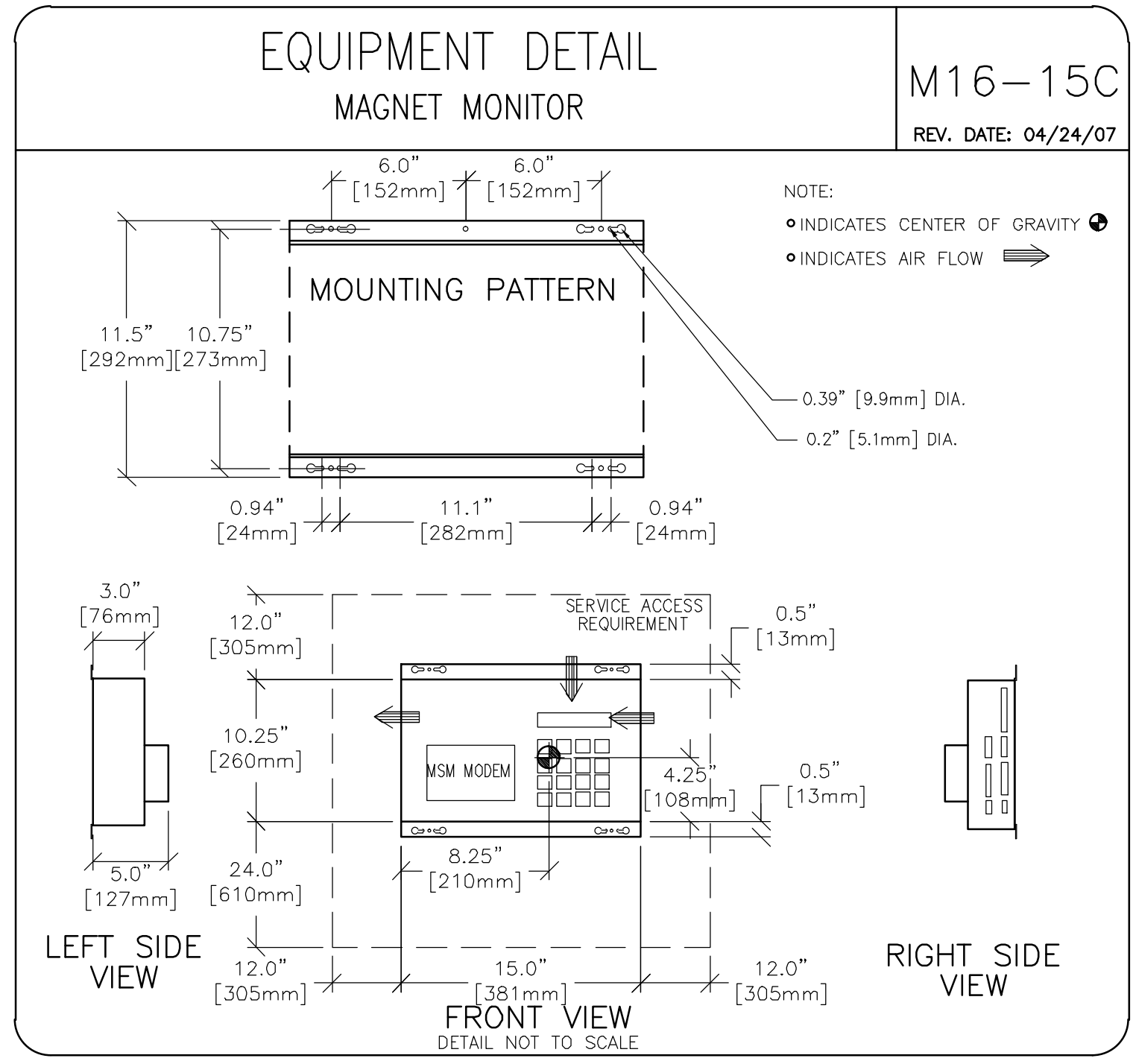
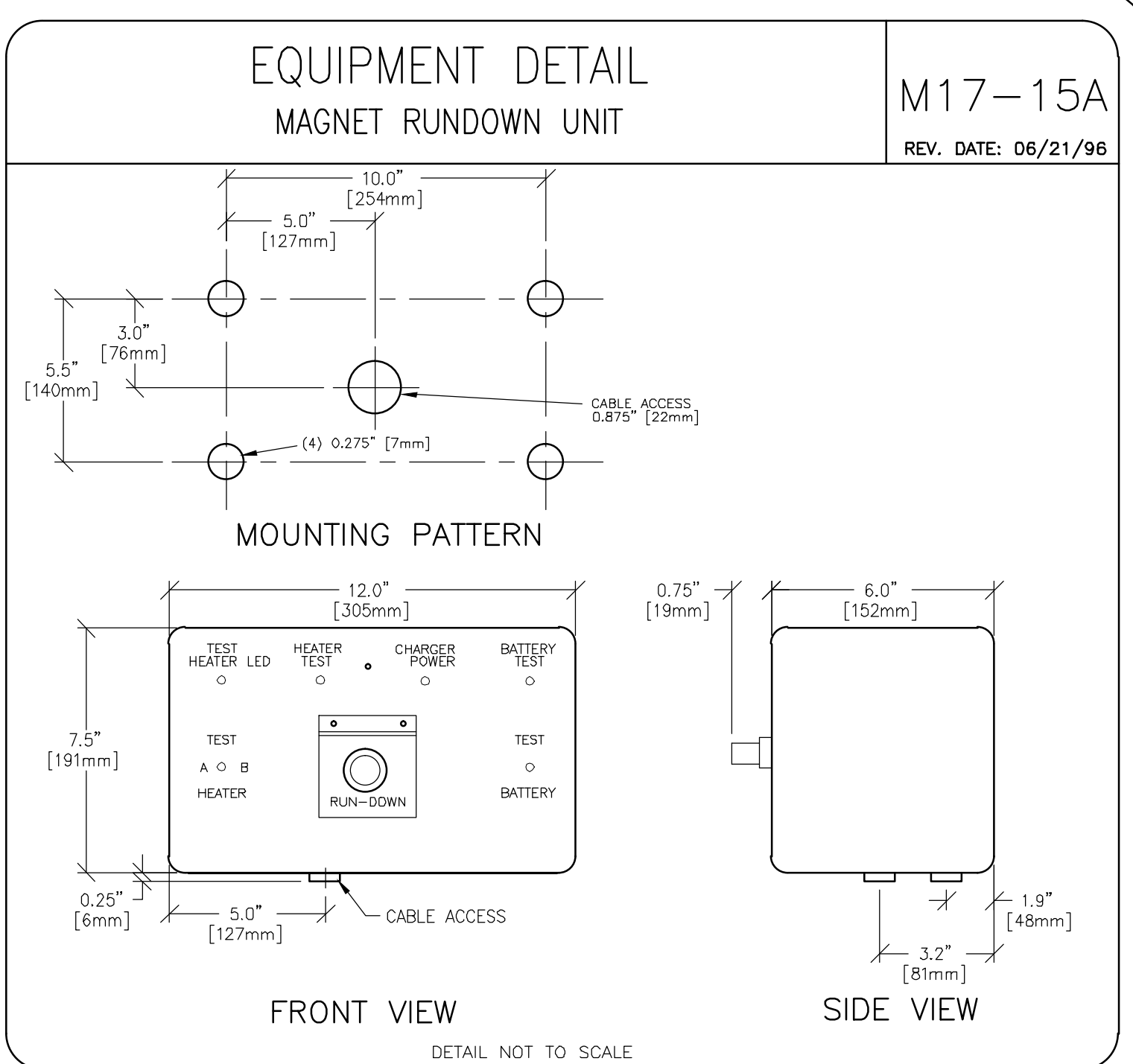
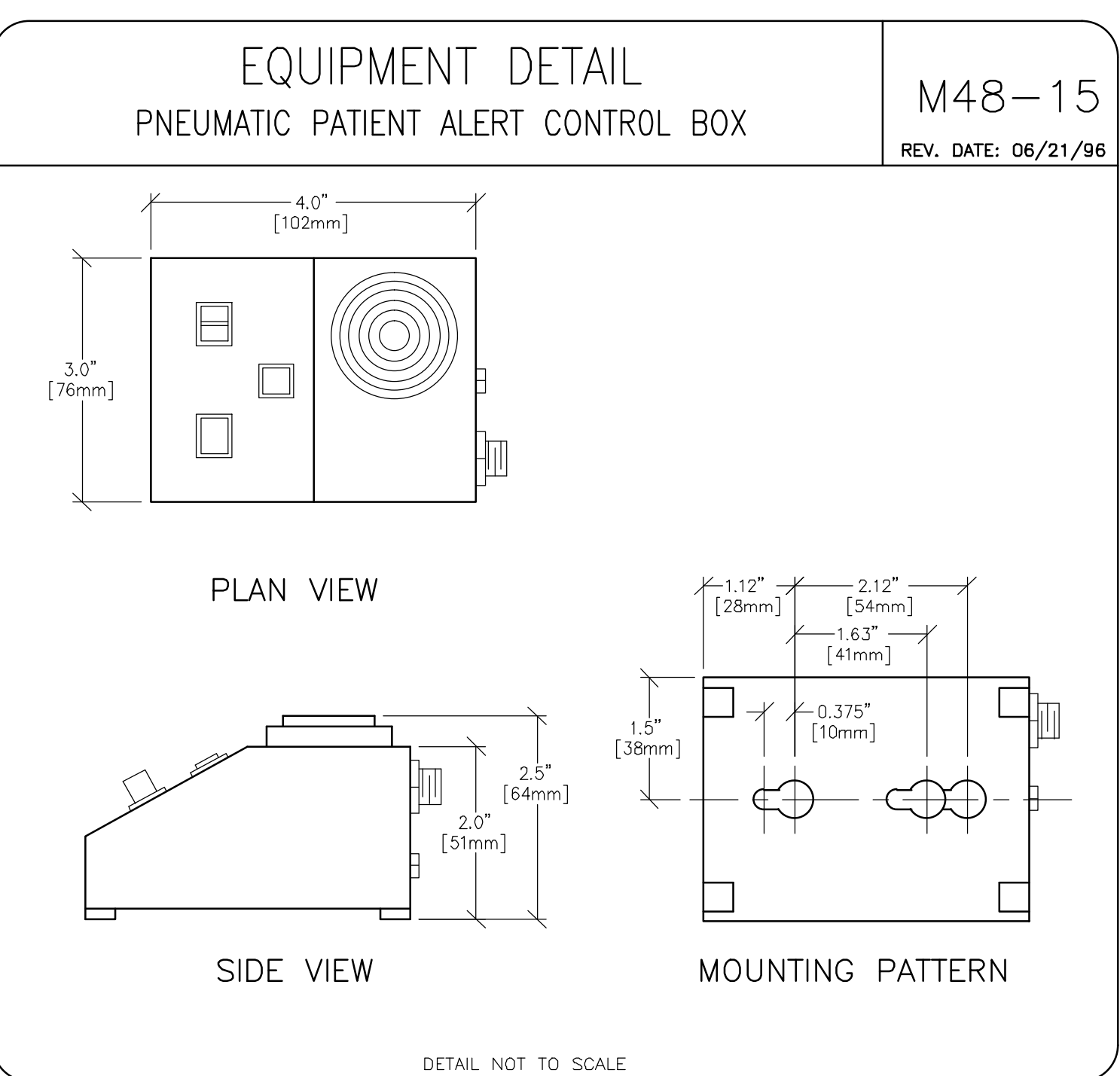
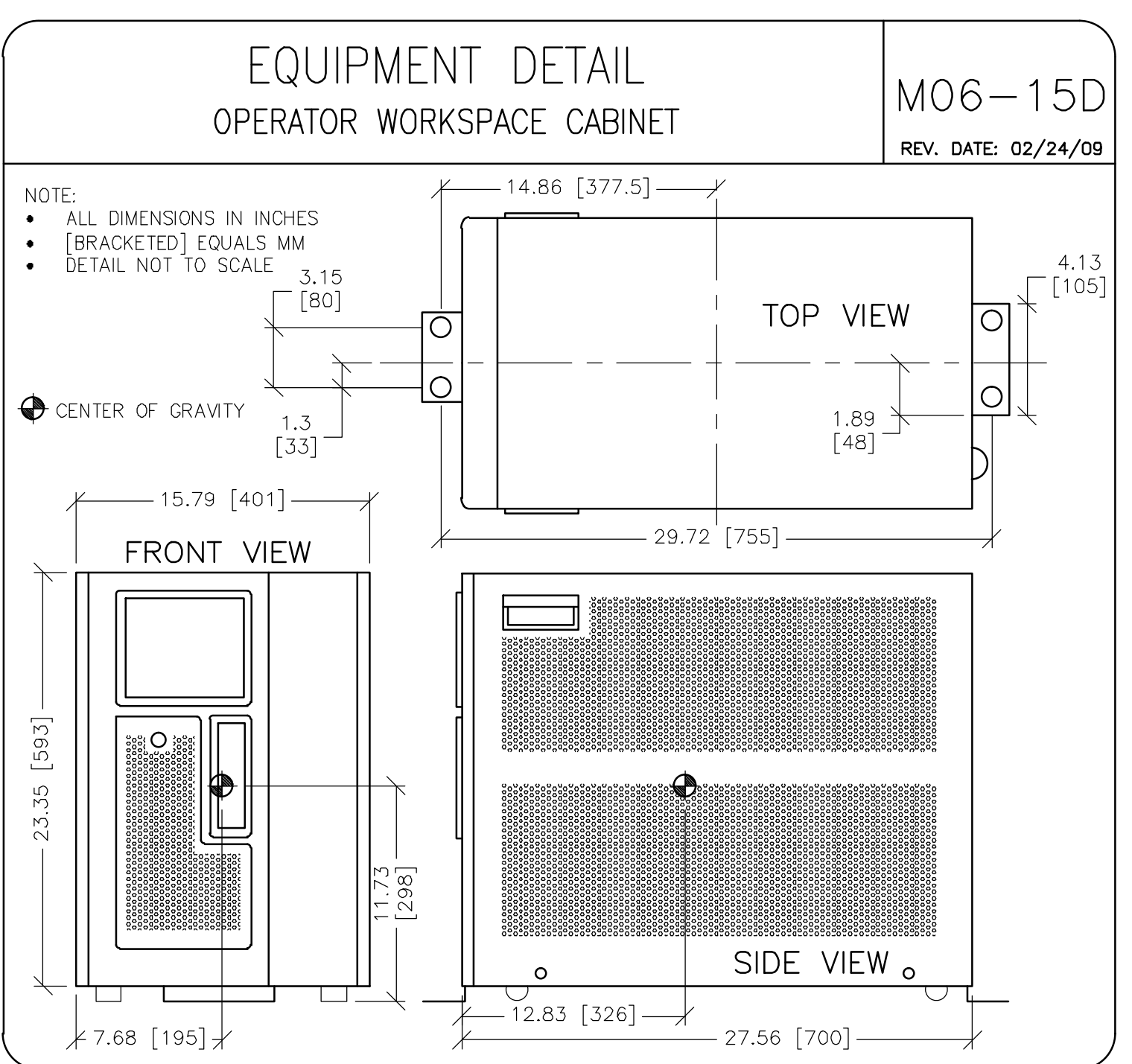
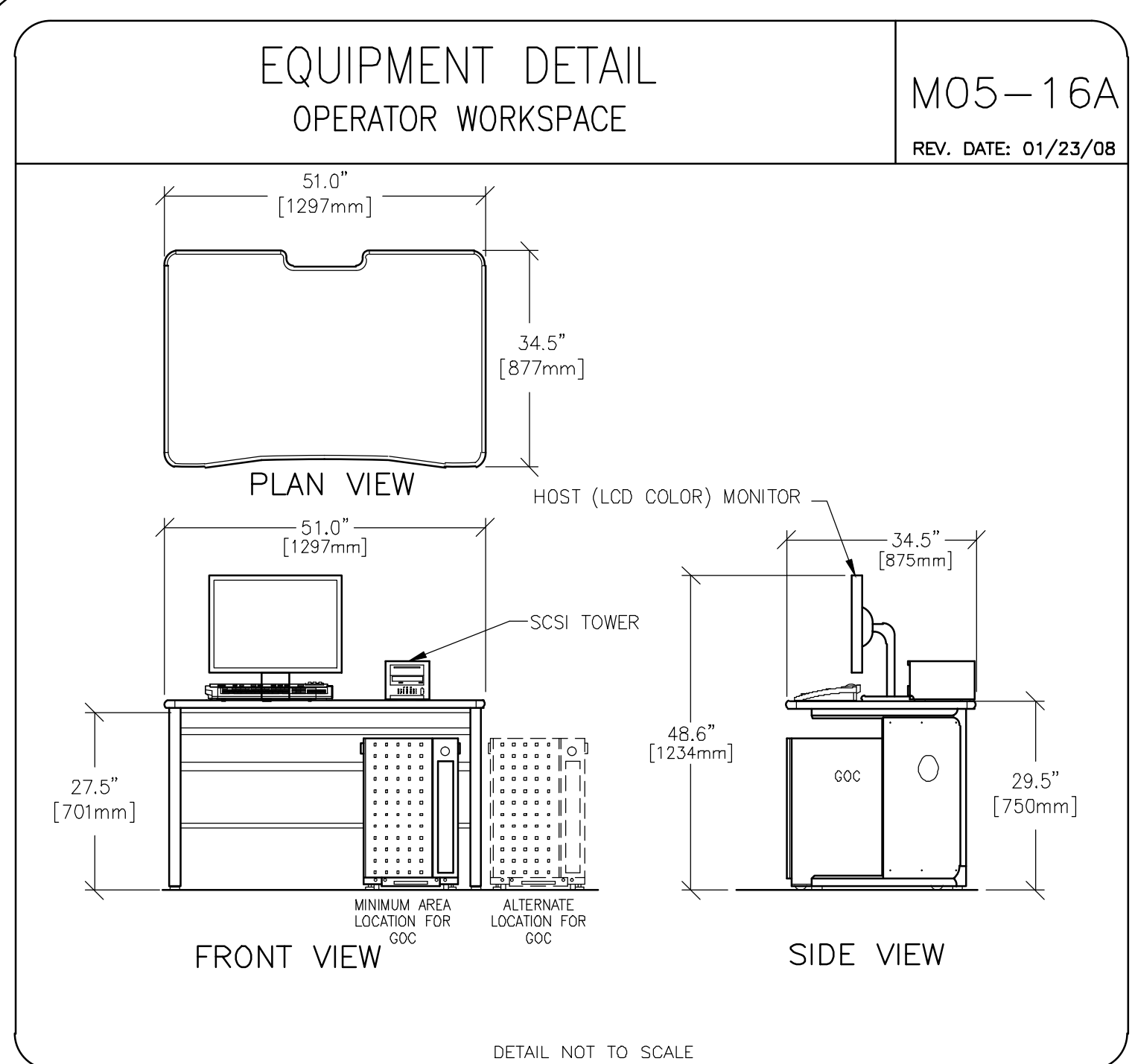
PROJECT: 8-206F  
REVISION: 03

DATE: 11.JAN.12  
DRAWN BY: PMM  
CHECKED BY: TMS

REVISION HISTORY:

SHEET  
D1

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Milwaukee, Wisconsin

SHEET TITLE: EQUIPMENT DETAILS  
MODALITY TYPE: 1.5T SIGNA HDx

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PROJECT TITLE: 8-206f  
TYPICAL LAYOUT

PROJECT: 8-206F  
REVISION: 03  
DATE: 11 JAN 12  
DRAWN BY: PMM  
CHECKED BY: TMS

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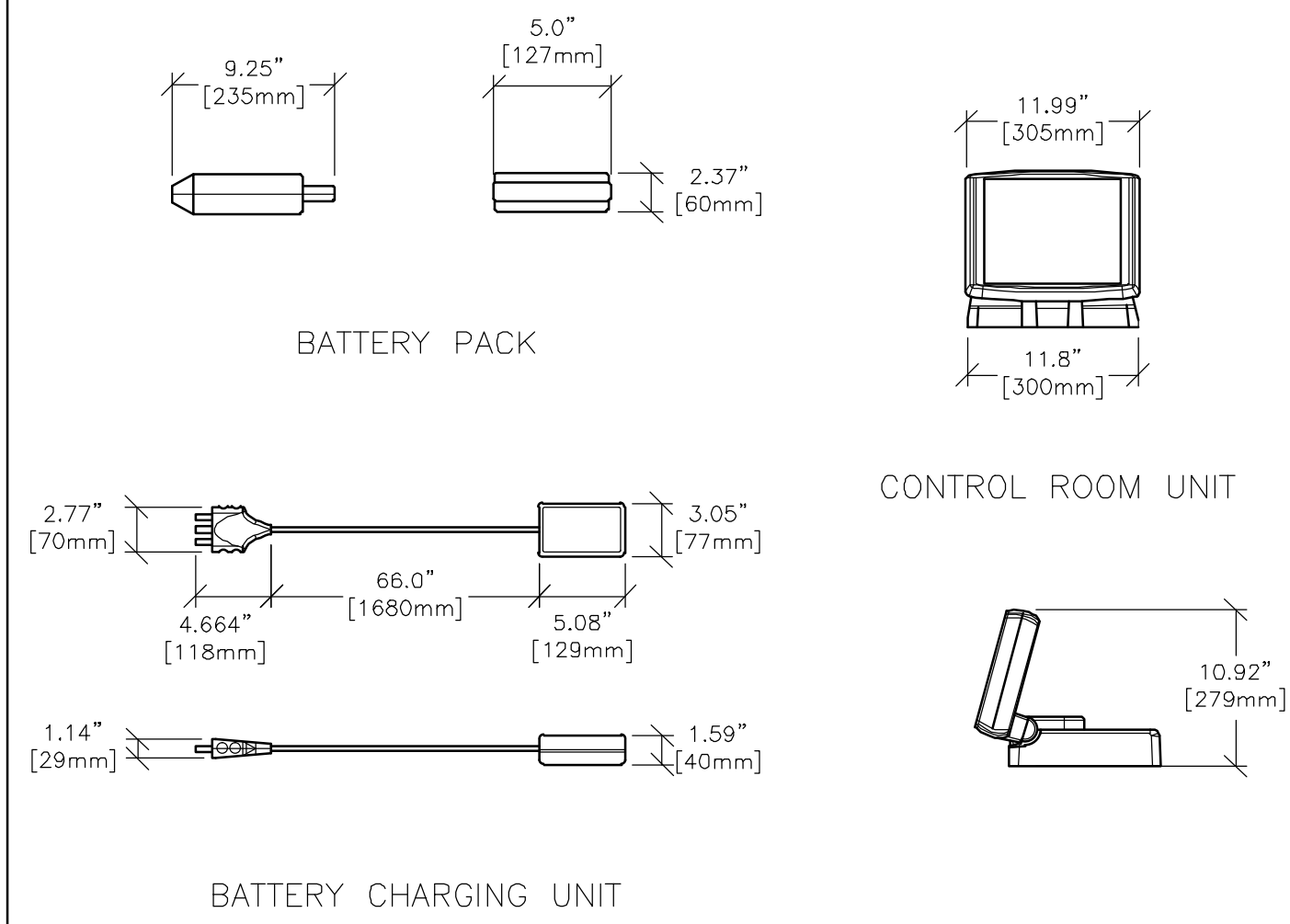
SHEET D2

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EQUIPMENT DETAIL  
SOLARIS INJECTOR ELECTRONICS

E88-04S

REV. DATE: 04/18/03

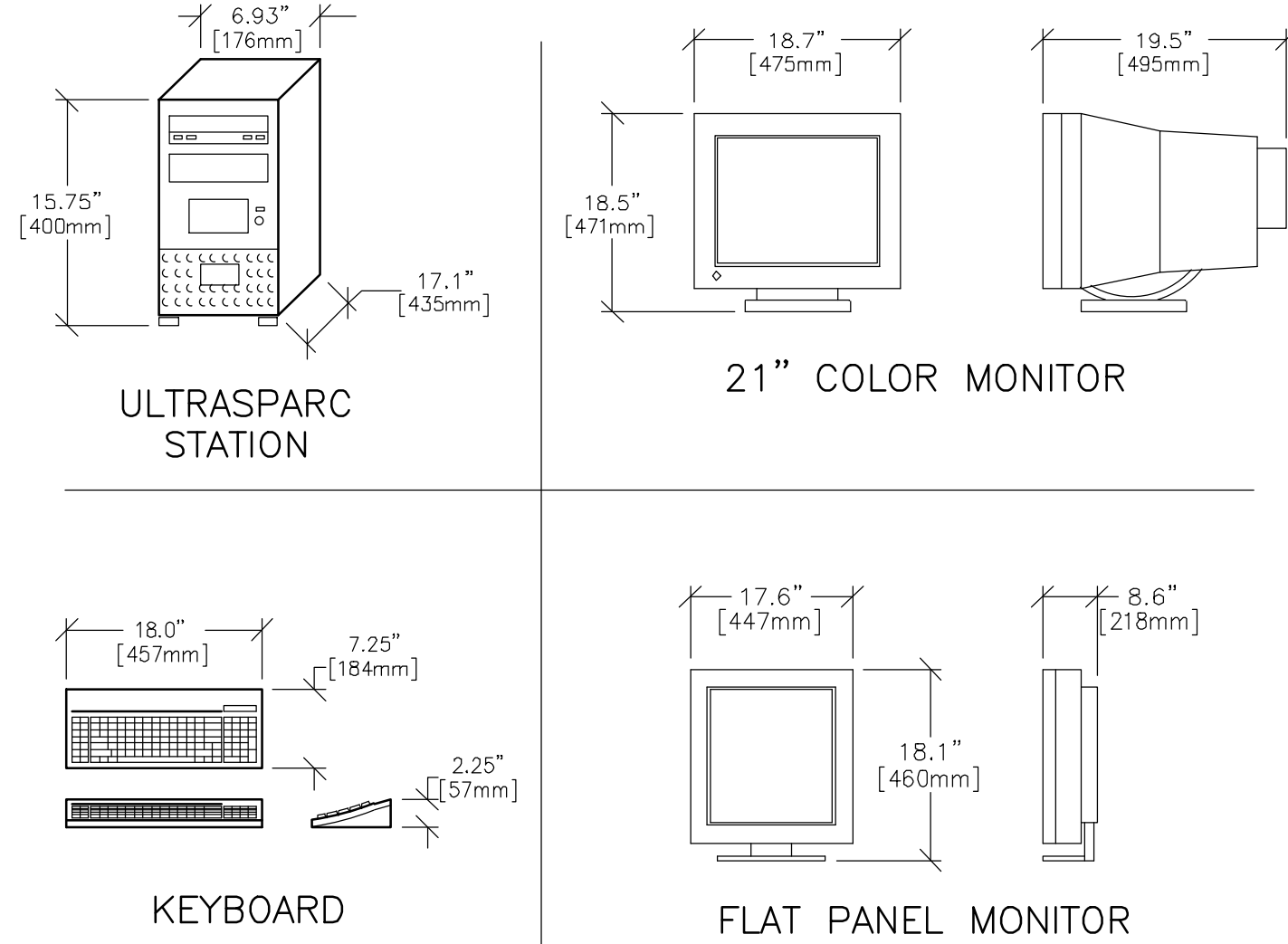


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EQUIPMENT DETAIL  
WORKSTATION

M1013AW

REV. DATE: 04/25/01



DETAIL NOT TO SCALE

This drawing is based on Sketch No.: 8-206

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SHEET TITLE: EQUIPMENT DETAILS  
MODALITY TYPE: 1.5T SIGNA HDx

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PROJECT TITLE:  
**8-206f**  
TYPICAL LAYOUT

PROJECT	REVISION
8-206F	03
DATE:	11.JAN.12
DRAWN BY:	PMM
CHECKED BY:	TMS

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SHEET  
**D3**

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