

Drawing Index

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

SITE READINESS	C1
EQUIPMENT LAYOUT (Equipment locations, heat loads, component weights, environmental specs)	A1
STRUCTURAL LAYOUT (Structural support/mounting locations for floor/wall/ceiling, wall support elevations)	S1
STRUCTURAL DETAILS (Floor and Ceiling loading information)	S2
ELECTRICAL LAYOUT (Contractor supplied wiring, interconnect methods, junction point locations and descriptions)	E1
ELECTRICAL SPECIFICATIONS (Maximum wiring run lengths, interconnect diagram, system power specifications)	E2
ELECTRICAL DETAILS	E3
MECHANICAL LAYOUT (Chiller information)	M1
EQUIPMENT DETAILS	D1 THRU D2

These 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 operation of such equipment in compliance with GE Healthcare's written specifications and all applicable federal, state, and/or local requirements.

* REQUIRED REFERENCE *

Optima MR450w
Pre Installation Manual
5670001

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

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 Rev 19					
<p>Before using this document, ensure you have the latest Rev from MyWorkshop on DO00422752</p> <p>GEHC Global Order #: _____ Customer: _____ GEHC P#M: _____ FE / Installer: _____</p> <p>The customer is responsible for proper site preparation regardless of any GEHC measurements/inspections/assessments.</p>					
Inspection Date	Storage is met?	P#M is met?	FE is met?	Comments If "N", enter comments or action plan	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

GE Healthcare
Healthcare Project Implementation - Design Center
Minneapolis, Wisconsin
Copyright © 2009 General Electric Company - Proprietary to GE

SHEET TITLE: SITE READINESS
MODALITY TYPE: OPTIMA MR450W
THIS PLAN IS SUBMITTED TO CURRENT LOCATION OF GE HEALTHCARE EQUIPMENT AND ASSOCIATED ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. IN PREPARING THIS PLAN, EVERY EFFORT HAS BEEN MADE TO CONFORM DETAILS TO THE LATEST REVISED DRAWINGS. IT IS THE CUSTOMER'S RESPONSIBILITY TO VERIFY ALL CONSTRUCTION DETAILS BEFORE ANY CONSTRUCTION BEGINS. THE COMPANY CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

PROJECT TITLE:
ORTHOPAEDIC ASSOCIATES OF PORTLAND
PORTLAND, MAINE

PROJECT	REVISION
130261	00
DATE:	22.Jan.13
DRAWN BY:	TMS
CHECKED BY:	PMM
GON NO.:	4057873
GON DT.:	16.Jan.13

REVISION HISTORY:

SHEET
C1

This drawing is based on Sketch No.: 1.3nef006
P#M R6
RQ - 132725

GE EQUIPMENT LISTING

EQUIPMENT ON ORDER FROM GE HEALTHCARE, INSTALLED BY GE HEALTHCARE, PER CON 4057873 DATED 16.Jan.13

NOTE: LOCAL CONDITIONS MAY DICTATE THAT ITEMS IDENTIFIED IN THIS CATEGORY BE INSTALLED BY OTHERS.

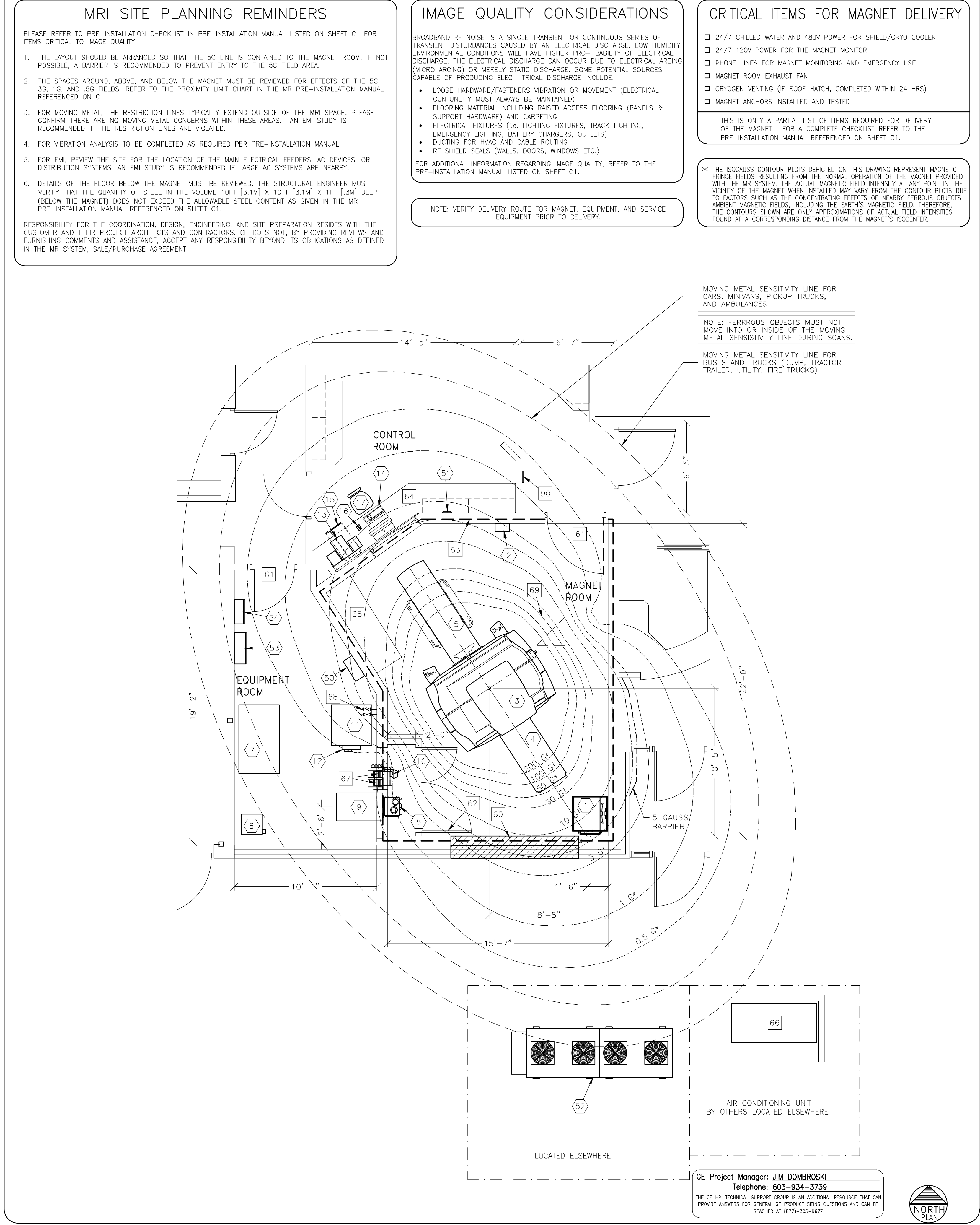
ITEM NO.	QUANTITY ORDERED	REFER TO SHEET "D"	ITEM DESCRIPTION (* = EXISTING/REINSTALL)	WEIGHT	HEAT OUTPUT (PER HOUR)	DETAIL NO.	STRC PLAN	ELEC PLAN
1	1		SPT PHANTOM CABINET	350 lbs		M6115	-	-
2	1		MAGNET RUNDOWN UNIT	8 lbs		M1715C	-	MRU C
3	1		1.5 TESLA ACTIVE SHIELD MAGNET	11975 lbs	8191 btu	M2315F M2315E M3300E M33007	-	MAG C
4	1		REAR PEDESTAL	213 lbs			-	C S
5	1		PATIENT TRANSPORT TABLE (DOES NOT INCLUDE PATIENT)	462 lbs			0	C S
6	1		SHIELD COOLER CABINET	264 lbs	1706 btu	M33004	-	CRY C
7	1		POWER, GRADIENT, RF CABINET	3143 lbs	20945 btu	M3015G	-	PGR S
8	1		BLOWER BOX	1535 lbs		M3015J	-	PGR S
9	1		PEN PANEL CABINET (EXAM ROOM SIDE)	639 lbs	10639 btu	M3015F	-	PEN S
10	1		RF PENETRATION PANEL	92 lbs		M3015F	-	SPW S
11	1		HEAT EXCHANGER CABINET	1349 lbs	3412 btu	M3015B M3015D	-	HEC S
12	1		MAGNET MONITOR	11 lbs	819 btu	M1615C	-	MDN C
13	1		MR MUSIC SYSTEM INCLUDING SPEAKERS, REMOTE CONTROL AND TRANSDUCER	44 lbs		M6715	-	MU C
14	1		OPERATOR WORKSPACE W/COLOR LCD MONITOR		4948 btu	M3015D	-	DW C
15	1		OPERATOR WORKSPACE CABINET	141 lbs		M0615D	-	C C
16	1		PATIENT ALERT CONTROL BOX			M4815	-	PA S
17	1		OPERATOR'S CHAIR				-	C S

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

18	1		MANUAL CRYOGEN COMPRESSOR WATER BYPASS PANEL CAT NO. E8911CG			B0571	-	-
19	1		REMOTE GRAPHIC DISPLAY	4001 lbs	167301 btu	M0300E	-	RGD S
20	1		DIMPLEX 5000 CHILLER	130 lbs	901 btu	M1715E	-	MDP C
21	1		MAIN DISCONNECT PANEL	134 lbs	1023 btu	M2015	-	DCL C

EQUIPMENT LAYOUT SCALE: 1/4" = 1'-0" RECOMMENDED CEILING HEIGHT = 8'-9"

This equipment layout indicates the placement and interconnection of the indicated equipment components. There may be federal, state, and/or local requirements that could impact the placement of these components. It remains the Customer's responsibility for ensuring the site and final equipment placement complies with all applicable federal, state, and/or local requirements.



ANCILLARY ITEMS

CUSTOMER/CONTRACTOR SUPPLIED AND INSTALLED ITEMS

ITEM NO.	ITEM DESCRIPTION (* INDICATES EXISTING)
60	MINIMUM 9 FT. -0 IN. [2743 mm] X 9 FT. -0 IN. [2743 mm] REMOVABLE WALL SECTION FOR MAGNET DELIVERY/REMOVAL.
61	MINIMUM DOOR OPENING FOR EQUIPMENT DELIVERY IS 43 IN. W X 82 IN. H [1092mm X 2083mm]. CENTERING ON A 96 IN. [2438mm] CORRIDOR WIDTH
62	LOUVERED DOORS - OPENING WILL NEED TO BE 6 FT. TOTAL
63	RF SCREEN, INCLUSIVE OF WALLS, FLOOR, DOOR, ETC. GROUND IMPEDANCE GREATER THAN 1000 OHMS. ATTENUATION 100dB AT 100MHZ TO 10MHZ PLANEWAVE (RECOMMENDED 100dB AT 150MHZ +/-10MHZ PLANEWAVE)
64	COUNTERTOP WITH DRAWERS FOR MISCELLANEOUS ITEMS.
65	BASE CABINET FOR STORAGE OF SURFACE COILS, PATIENT POSITIONING PADS, PHANTOMS, ETC.
66	AIR CONDITIONING VIBRATION ISOLATION IS RECOMMENDED AT SUPPORTS OF EACH UNIT TO BE INSTALLED.
67	RF FILTERS - LOCATE WITHIN 40 IN. [1016 mm] OF THE RF COMMON GROUND STUD
68	VALVES AND HOSE BARBS FOR COOLING SYSTEM
69	MAGNET ROOM EXHAUST FAN

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

90	METAL DETECTOR (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 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 PREDICATED 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 INSTALLATION. 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: CONTROL AND EQUIPMENT ROOMS ARE 59-89.6 DEG (F) [15-32 (C)]. MAGNET ROOM IS 59-69.8 DEG (F) [15-21 (C)]. MAXIMUM ALLOWABLE TEMPERATURE CHANGE OF 5 DEG (F)/HR [3 (C)/HR]. MAXIMUM ROOM TEMPERATURE GRADIENT 5 DEG (F) [3 (C)].
- HUMIDITY: CONTROL AND EQUIPMENT ROOMS ARE 30 TO 70 PERCENT NON-CONDENSING. MAGNET ROOM IS 30 TO 60 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 OVERNIGHT, WEEKENDS, AND HOLIDAYS.
- 24 HOUR VENTING AND HVAC MUST BE AVAILABLE UPON MAGNET DELIVERY. [THIS WILL INCLUDE CHILLED WATER SUPPLY].
- CRYOGEN VENTING AND EMERGENCY EXHAUST SYSTEMS MUST BE COMPLETED IN THE MAGNET ROOM PRIOR TO DELIVERY.
- FLOUORESCENT LIGHTING, SCR DIMMERS OR RHEOSTATS ARE NOT ALLOWED IN THE MAGNET ROOM.

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 < 20mG RMS AC. EMI < 5.87mG DC.
- POTENTIAL EXISTS UNDER FAULT CONDITIONS THAT THE 5 GAUSS LINE MAY EXPAND RADIALLY TO 9.35 FT. [2.85 m] AND AXIALLY TO 14.27 FT. [4.35 m] FOR 1 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]	24.6 ft. [7.5 m]
BUSES AND TRUCKS (DUMP, TRACTOR TRAILER, UTILITY, FIRE TRUCKS)	18.1 ft. [5.52 m]	28.75 ft. [8.76 m]

GE Healthcare
Healthcare Project Implementation - Design Center
Minneapolis, MN

SHEET TITLE: EQUIPMENT LAYOUT
MODALITY TYPE: OPTIMA MR450W

THIS PLAN IS SUBMITTED TO SUBJECT LOCATION OF GE HEALTHCARE EQUIPMENT AND ASSOCIATED APPARATUS TO VERIFY ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. IN PREPARING THIS PLAN, EVERY EFFORT HAS BEEN MADE TO CONFORM TO ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS AND CODES. THE COMPANY CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

PROJECT TITLE:
ORTHOPAEDIC ASSOCIATES OF PORTLAND
PORTLAND, MAINE

PROJECT	REVISION
130261	00

DATE: 22.Jan.13
DRAWN BY: TMS
CHECKED BY: PMM
CON NO: 4057873
CON DT: 16.Jan.13

REVISION HISTORY:

SHEET
A1

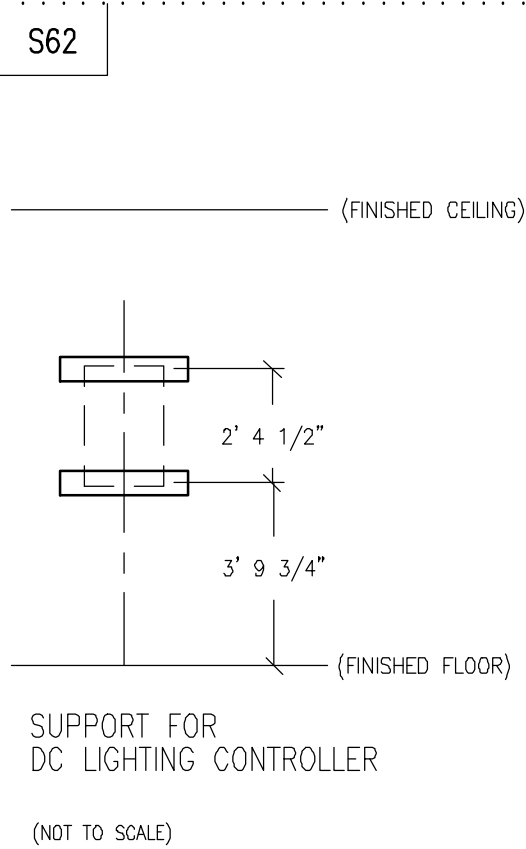
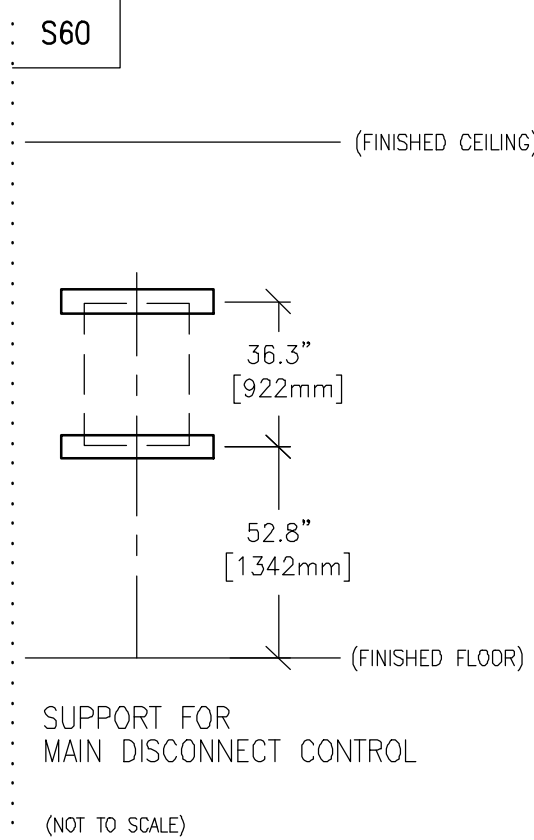
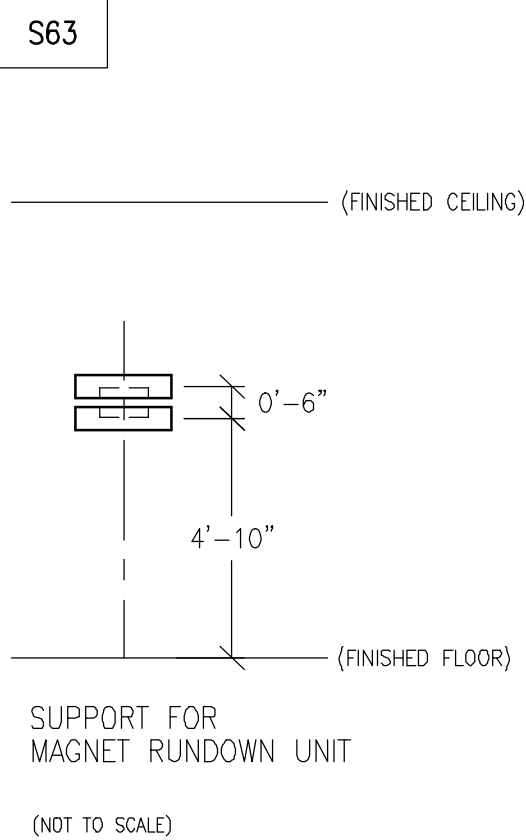
This drawing is based on Sketch No. 1.3nef006 PIM R6 RQ - 132725



GE Project Manager: **JIM DOWBROSKI**
Telephone: 603-934-3739

THE GE MR TECHNICAL SUPPORT GROUP IS AN ADDITIONAL RESOURCE THAT CAN PROVIDE ANSWERS FOR GENERAL GE PRODUCT SITING QUESTIONS AND CAN BE REACHED AT (877)-305-9677

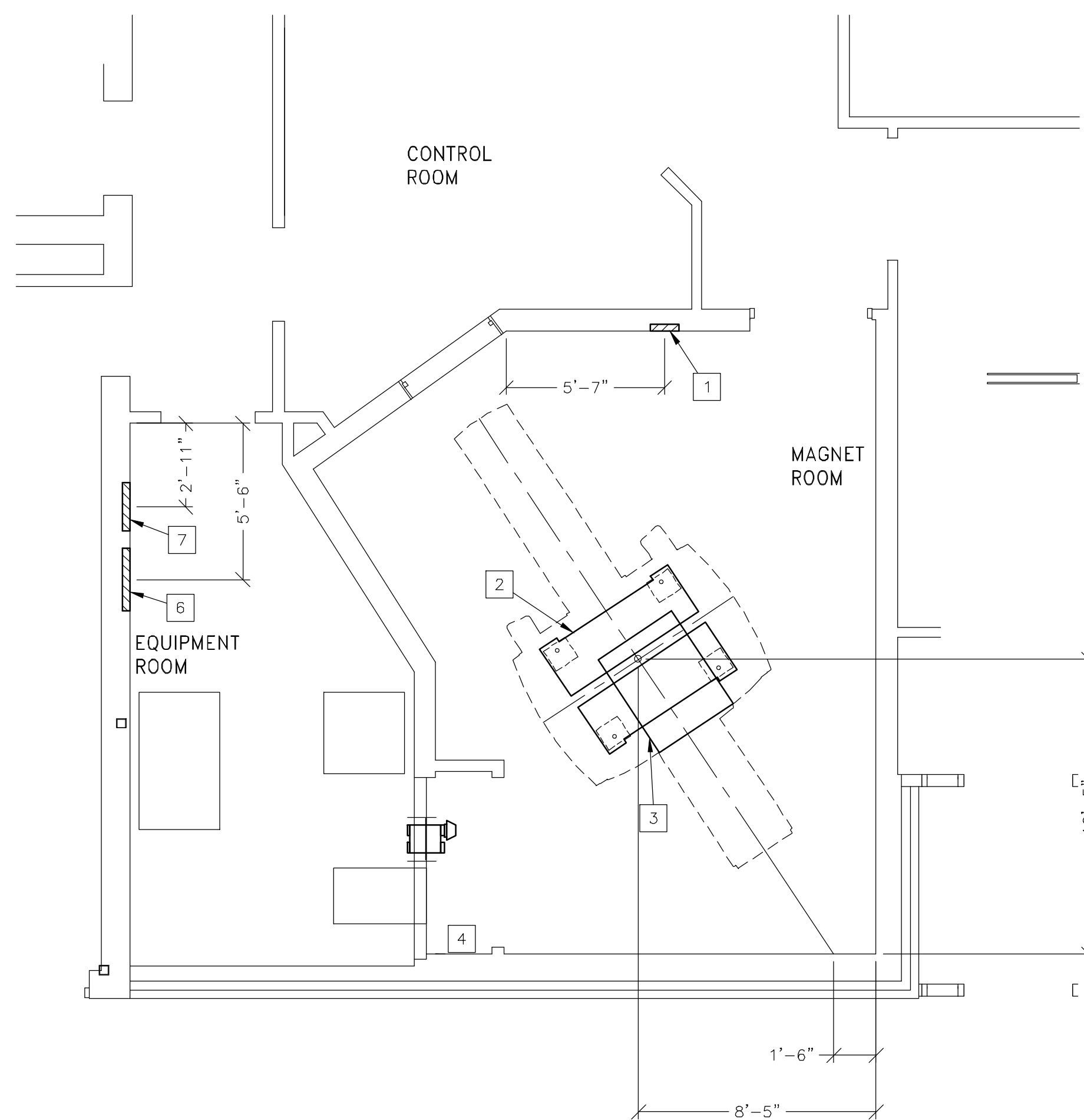
TYPICAL WALL SUPPORT ELEVATIONS



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

STRUCTURAL LAYOUT

RECOMMENDED CEILING HEIGHT = 8'-9"



GE Project Manager: **JIM DOWBROSKI**
Telephone: 603-934-3739
THE GE HPI TECHNICAL SUPPORT GROUP IS AN ADDITIONAL RESOURCE THAT CAN PROVIDE ANSWERS FOR GENERAL GE PRODUCT SITING QUESTIONS AND CAN BE REACHED AT (877)-305-9677

STRUCTURAL SUPPORT METHODS

CUSTOMER/CONTRACTOR SUPPLIED AND INSTALLED ITEMS

ITEM NO.	ITEM DESCRIPTION (* INDICATES EXISTING)
1	SUPPORT BACKING, LOCATE AS SHOWN, REFER TO ELEVATION DETAIL S63, FOR MAGNET RUNDOWN UNIT.
2	SEE MAGNET FLOOR MOUNTING DETAIL ON SHEET S6 FOR MORE INFORMATION.
3	CABLE ACCESS OPENING IN CEILING, SEE DETAIL ON SHEET S2.
4	SUITABLE WALL BACKING FOR CABLE STORAGE CONSULT WITH FE OR PROJECT MANAGER FOR SPECIFICATIONS.
5	CONCRETE PAD FOR CHILLER - CONSULT MANUFACTURER FOR SPECIFICATIONS.
6	SUPPORT BACKING, LOCATE AS SHOWN, REFER TO ELEVATION DETAIL S60, FOR MAIN DISCONNECT CONTROL.
7	SUPPORT BACKING, LOCATE AS SHOWN, REFER TO ELEVATION DETAIL S62, FOR DC LIGHTING CONTROL.

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 0.125 in. (3 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 IMPORANT 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: OPTIMA MR450W

THIS PLAN IS SUBMITTED TO SUBMIT LOCATION OF GE HEALTHCARE EQUIPMENT AND ASSOCIATED APPARATUS, ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. IN PREPARING THIS PLAN, EVERY EFFORT HAS BEEN MADE TO CONFORM TO DETAILS AND SPECIFICATIONS OF THE EQUIPMENT TO BE INSTALLED. THE COMPANY CANNOT ACCEPT LIABILITY FOR ANY DAMAGES RESULTING FROM THE COMPANY'S NEGLIGENCE OR RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

PROJECT TITLE:
ORTHOPAEDIC ASSOCIATES OF PORTLAND
PORTLAND, MAINE

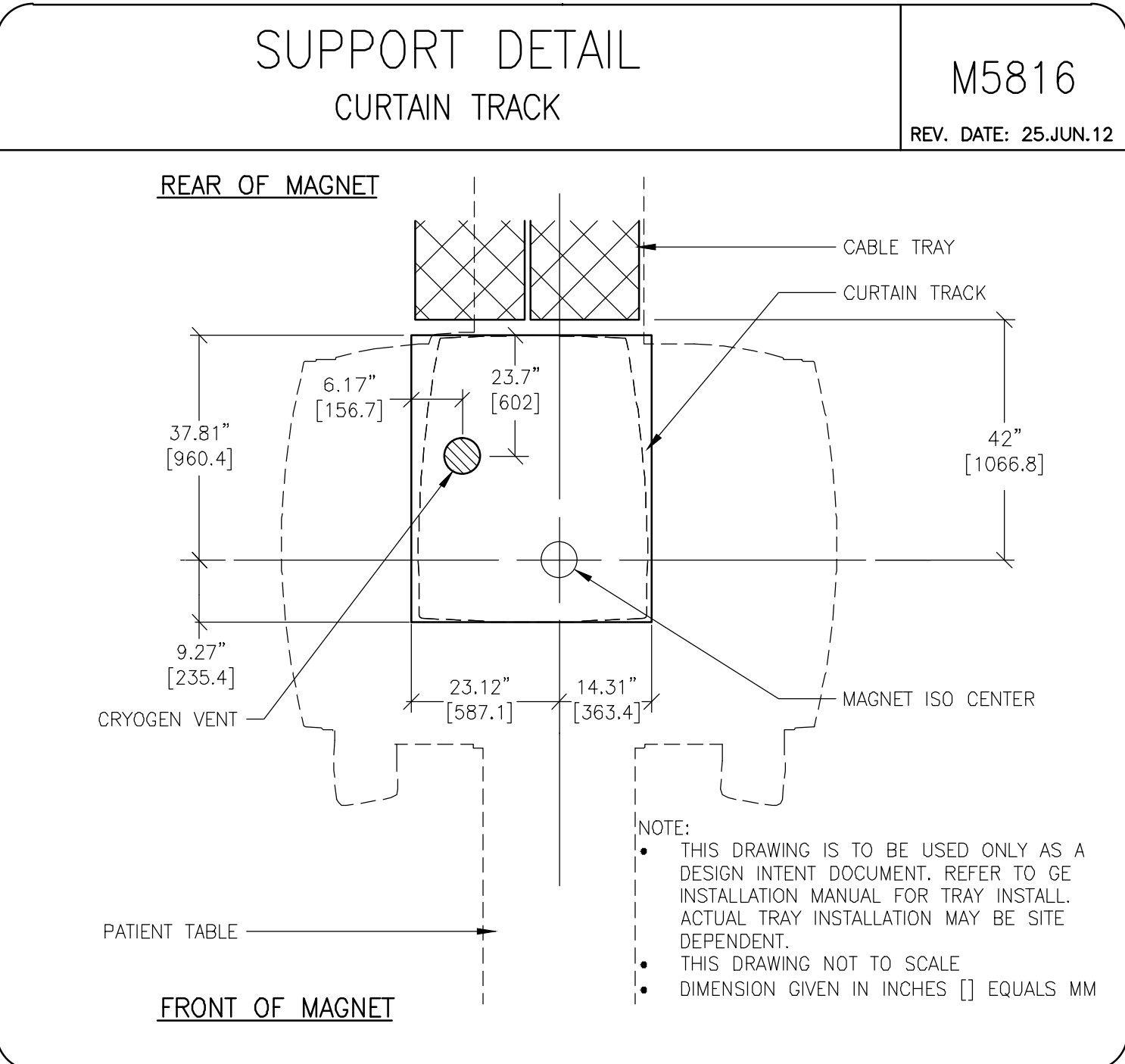
PROJECT	REVISION
130261	00
DATE:	22 Jan. 13
DRAWN BY:	TMS
CHECKED BY:	PMM
CON NO.:	4057873
CON DT.:	16 Jan. 13

REVISION HISTORY:

SHEET
S1

This drawing is based on Sketch No.: 1.3nef006
PIM R6
RQ - 132725

GE Healthcare
Healthcare Project Implementation - Design Center
Milwaukee, Wisconsin



ACOUSTICS AND VIBRATION GUIDELINES: MAGNET

M66-15G2
 REV. DATE: 08/26/09

SYSTEM ACOUSTIC NOISE LEVELS

ANY GE FACTORY-INSTALLED PROTOCOL CAN BE MODIFIED BY OPERATORS, WHICH CAN INCREASE OR DECREASE ACOUSTIC SPL (SOUND PRESSURE LEVEL); OR OPERATORS MAY CREATE THEIR OWN PROTOCOL WHICH COULD PRODUCE A HIGHER OR LOWER ACOUSTIC SPL AS STATED UNDER OPERATING CONDITIONS CONDITION 1 BELOW. TYPICAL SCANS GENERATE ACOUSTIC LEVELS AS STATED UNDER OPERATING CONDITIONS CONDITION 2 BELOW. IN ADDITION, THE EXPOSURE TIMES ARE COMPLETELY UNDER OPERATOR CONTROL. CONSEQUENTLY, HEARING PROTECTION IS REQUIRED FOR ALL PEOPLE IN THE MAGNET ROOM DURING SCANS TO PREVENT HEARING IMPAIRMENT, ACOUSTIC LEVELS MAY EXCEED 99 dBA. AGAIN, FOR MORE INFORMATION ABOUT RECOMMENDED SAFETY PROCEDURES REGARDING PATIENT EXPOSURE TO MR-GENERATED ACOUSTIC NOISE, SEE THE MR SAFETY GUIDE INCLUDED IN THE USER MANUAL.

AMBIENT CONDITIONS

TO REDUCE ANY BACKGROUND NOISE DUE TO CABINET BLOWERS, ETC., ACOUSTICAL CEILINGS, WALLS, AND FLOORS ARE RECOMMENDED. THE FOLLOWING ARE TYPICAL NOISE LEVEL READINGS:

- OPERATOR AREA62 dBA
- EQUIPMENT ROOM80 dBA

OPERATING CONDITIONS

CONDITION 1

MR SCANNERS UNDER "WORST-CASE" OPERATING CONDITIONS, COULD GENERATE ACOUSTIC LEVELS (AS MEASURED AT THE MAGNET ISO-CENTER) AS FOLLOWS:

AVERAGE SPL 127 dBA
 FREQUENCY RANGE 20 TO 20k Hz

SPL = SOUND PRESSURE LEVEL

VIBRATION

- THE MAGNET MAY BE SENSITIVE TO VIBRATIONS IN THE FREQUENCY RANGE OF 0.5 TO 45 Hz DEPENDING ON THE AMPLITUDE OF THE VIBRATION. IN THE PHYSICAL AREA WHERE THE MR SYSTEM IS TO BE LOCATED, EVERY PRECAUTION MUST BE TAKEN TO ENSURE THAT THE VIBRATION IS MINIMIZED. IN THE MAGNET SITING AREA, THE STRUCTURAL STABILITY AND BEHAVIORAL CHARACTERISTICS CAN BE ASSESSED. THE VIBRATION TESTS OUTLINED CAN BE USED TO ASSESS THE VIBRATION ENVIRONMENT. SITES WHICH CURRENTLY PASS THE VIBRATION STABILITY CRITERIA MAY PROCEED WITH INSTALLATION. SITES WHICH HAVE MARGINAL VIBRATION STABILITY REQUIRE SOURCE ISOLATION OR STRUCTURAL MODIFICATIONS. THEN IT IS THE CUSTOMER'S RESPONSIBILITY TO CONTRACT A VIBRATION CONSULTANT OR QUALIFIED ENGINEER TO IMPLEMENT DESIGN MODIFICATIONS TO MEET THE SPECIFIED LIMITS. WITH THE VIBRATION CONSULTANT PRESENT, LOCAL GE FIELD SERVICE AND/OR INSTALLATION SPECIALIST MUST VERIFY THE ELIMINATION/REDUCTION OF ALL IDENTIFIED SOURCES DO IMPROVE THE VIBRATION ENVIRONMENT. GE CAN ASSIST IN INTERPRETING MARGINAL SITE TEST RESULTS AND PREDICTING THE IMPACT ON SYSTEM PERFORMANCE. HOWEVER IT IS ULTIMATELY THE CUSTOMER/ARCHITECT/ENGINEER RESPONSIBILITY TO DESIGN SITE SOLUTION.
- TO MINIMIZE THE INTERFERENCE, THE MAGNET SHOULD BE PLACED ON A SOLID FLOOR, LOCATED AS FAR AS POSSIBLE FROM THE VIBRATION SOURCES, SUCH AS PARKING LOTS, ROADWAYS, SUBWAYS, TRAINS, HALLWAYS, ELEVATORS, HELIPORTS AND HOSPITAL PHYSICAL PLANTS CONTAINING PUMPS, MOTORS, AIR HANDLING EQUIPMENT, OR AIR CONDITIONING EQUIPMENT.

PLEASE NOTE THAT OTHER ITEMS NOT LISTED COULD ALSO BE POTENTIAL SOURCES OF VIBRATION.

VIBRATION ISOLATION IS RECOMMENDED AT FLOOR CONNECTION POINTS OF THE AIR CONDITIONING UNIT(S) TO BE INSTALLED FOR THE PURPOSE OF COOLING THE MR SUITE.

ISOLATION OF THE MR MAGNET IS NOT A RECOMMENDED SOLUTION FOR REDUCING ENVIRONMENTAL VIBRATION.

- VIBRATION MEASUREMENTS SHOULD BE MADE WHEN THE PROPOSED SITE IS LOCATED NEAR ANY OF THE SOURCES LISTED HERE. MEASUREMENTS SHOULD BE MADE USING A SPECTRUM ANALYZER CAPABLE OF PERFORMING THE TEST GUIDELINES.

MAGNET SITING REQUIREMENT

- THE MAGNET MUST BE RIGIDLY BOLTED TO THE FLOOR. VIBRATION MEASUREMENTS ON THE MAGNET SUPPORT MUST MEET THE GUIDELINES BELOW. CUSTOMER/CONTRACTOR IS RESPONSIBLE FOR THE PROPER MAGNET ANCHORING.

TRANSIENT VIBRATION

- TIME HISTORY VIBRATION LEVELS (WITH ALL STEADY STATE VIBRATION SOURCES POWERED DOWN) EXCEEDING TRIGGER OF **0.0005 g, ZERO TO PEAK** MUST BE FULLY ANALYZED TO ASSESS THE POTENTIAL IMPACT TO THE BUILDING STRUCTURE. THE BUILDING (SPECTRAL) RESPONSE IMMEDIATELY FOLLOWING THE **0.0005 g, ZERO TO PEAK TRIGGER LEVEL** (ENDING AT THE DECAY OF THE VIBRATION SIGNAL) MUST NOT CAUSE THE SITE ENVIRONMENT TO EXCEED THE **STEADY STATE VIBRATION** LEVELS DEFINED BELOW.

STEADY STATE VIBRATION

- THE MAXIMUM STEADY STATE VIBRATION TRANSMITTED THROUGH THE FLOOR MUST NOT EXCEED THE FOLLOWING MAXIMUM SINGLE FREQUENCY COMPONENTS ABOVE AMBIENT BASELINE:
 - 5 x 10⁻⁵ g rms at 0 Hz ramping to 10 x 10⁻⁵ g at 20 Hz
 - 10 x 10⁻⁵ g rms 20-40 Hz
 - 25 x 10⁻⁵ g rms 40-50 Hz

IN ORDER TO ENSURE THAT ANY DISCRETE SIGNAL REPRESENTS A REAL MECHANICAL VIBRATION SOURCE, THE SIGNAL MUST HAVE A BANDWIDTH THAT TYPICALS DYNAMIC SYSTEM RESPONSE.

TEST MEASUREMENTS (1.1)

VIBRATION MEASUREMENTS ARE IN THE RANGE OF 10⁻⁶ g. TEST EQUIPMENT MUST HAVE THE REQUIRED SENSITIVITY TO THESE LEVELS.

INSTRUMENTATION IS RECOMMENDED TO HAVE A LOW TOLERANCE TO TEMPERATURE EFFECTS AS MANY TIMES THE LOW FREQUENCY THERMAL DRIFT MAY INFLUENCE THE MEASUREMENTS.

IT IS HIGHLY RECOMMENDED ALL MEASURED DATA IS REAL TIME DATA ACQUISITION. RECORDING THE VIBRATION DATA WILL NOT ALLOW FOR A PROPER SITE SURVEY, SPECIFICALLY WHEN STUDYING TRANSIENT VIBRATION AND WHEN SEARCHING FOR SPECIFIC VIBRATION SOURCES.

ALL ANALYSES ARE TO BE NARROWBAND FAST FOURIER TRANSFORMS (FFT'S) OVER THE FREQUENCY BANDS LISTED BELOW:

FREQUENCYBAND	FREQUENCY RESOLUTION
0.2 TO 50 HZ	Δf = 0.125 HZ

TIME HISTORIES OF THE VIBRATION MUST BE RECORDED AS ACCELERATION LEVELS VS. TIME. THE RESOLUTION OF THE TIME HISTORY MUST BE ADJUSTED TO CLEARLY CAPTURE THE TRANSIENT EVENT. THE ANALYZER SET-UP WILL BE SITE DEPENDENT AND, IN SPECIAL CASES, VIBRATION RESPONSE DEPENDENT. IT IS THE RESPONSIBILITY OF THE VIBRATION CONSULTANT TO STUDY THE TRANSIENT ENVIRONMENT, CAPTURE DATA TO CONFIRM TRANSIENT ACTIVITY EXCEEDS THE TRIGGER LEVEL, THEN EXPAND THE TIME HISTORY DATA TO EXHIBIT THE STRUCTURAL RESPONSE.

EQUIPMENT (SPECTRAL ANALYZER) SET-UP (1.2)

- FREQUENCY AVERAGE A MINIMUM OF 20 LINEAR AVERAGES. DO NOT USE PEAK HOLD OR 1/3 OCTAVE ANALYSIS.
- AVERAGE AND STORE A MINIMUM OF 10 PLOTS TO SUPPORT THE SITE VIBRATIONS CONSISTENCY.
- HANNING WINDOW MUST BE APPLIED TO THE ENTIRE SPECTRA

SPECTRUM ANALYZERS CAPABLE OF THESE MEASUREMENTS ARE READILY AVAILABLE FOR PURCHASE OR RENTAL. MODELS SUCH AS THE HP 3560A, NICOLET PHASZER, B&K PULSE, AND HP 35670 ARE ALL CAPABLE OF MAKING THE SITE VIBRATION MEASUREMENTS. ACCELEROMETERS MUST HAVE THE CAPABILITY TO MEASURE FROM 0.2 Hz BEYOND 50 Hz. TIME HISTORIES CAN BE RECORDED USING ANY OF THE ANALYZERS LISTED ABOVE. PLEASE NOTE THAT THE EQUIPMENT MENTIONED ARE FOR EXAMPLE ONLY. IT IS THE RESPONSIBILITY OF THE ENGINEERING TEST FIRM TO PROVIDE EQUIPMENT THAT WILL ALLOW MEASUREMENTS COMPLIANT WITH THIS GUIDELINE.

DATA COLLECTIONS (1.3)

AMBIENT BASELINE CONDITION:

ALL OF THE MEASUREMENTS DEFINED IN 1.1 AND 1.2 (ABOVE) MUST BE MADE IN A 'QUIET' ENVIRONMENT, THAT IS, IN AREAS WHERE EXCESSIVE TRAFFIC, SUBWAY TRAINS, ETC. EXISTS. A VIBRATION MEASUREMENT MUST ALSO BE MADE DURING PERIODS WITHOUT TRAFFIC OR DURING PERIODS OF LIGHT TRAFFIC. MEASUREMENTS MUST DEFINE THE LOWEST LEVELS OF VIBRATION POSSIBLE AT THE SITE.

THE SOURCE OF ANY STEADY STATE VIBRATION WHOSE LEVELS EXCEED THE SPECIFICATIONS MUST BE IDENTIFIED AS TO THE SOURCE OF THE VIBRATION (DISTURBANCE). A SECOND MEASUREMENT SHOULD BE MADE WITH ALL OF THE IDENTIFIED CONTRIBUTORS POWERED DOWN IF POSSIBLE. IN SITUATIONS WHERE IT IS NOT POSSIBLE TO POWER DOWN EQUIPMENT, VIBRATION DATA MUST BE COLLECTED TO IDENTIFY SPECIFIC SOURCE OF THE VIBRATION CONCERN. THE MAJORITY OF STEADY STATE VIBRATION PROBLEMS CAN BE NEGATED BY ISOLATING THE VIBRATION SOURCE.

NORMAL CONDITION

ALL OF THE VIBRATION MEASUREMENTS LISTED ABOVE MUST BE REPEATED DURING PERIODS OF 'NORMAL' ENVIRONMENTAL CONDITIONS INCLUDING THE FFT'S AND TIME HISTORIES. THE TRANSIENT MEASUREMENTS MUST BE PROVIDED TO DEFINE THE DYNAMIC DISTURBANCES THE MR SYSTEM MIGHT BE EXPOSED TO. TRANSIENT ANALYSIS IS REQUIRED FOR A TRUE ASSESSMENT OF THE SITE.

SPECIAL ATTENTION MUST BE PAID TO THE SITE ASSESSMENT DURING THE ENTIRE ANALYSIS. SINCE TRANSIENT VIBRATION IS NOT EASILY ADDRESSED ONCE THE MR SUITE IS FULLY CONSTRUCTED, THE TEST CONSULTANT MUST FULLY UNDERSTAND THE NEEDS FOR THIS ANALYSIS. THE SOURCE OF ANY TRANSIENT MUST BE IDENTIFIED AND SUPPORTED WITH VIBRATION PLOTS. IF THE SOURCE OF ANY TRANSIENT IS NOT ABLE TO BE LOCATED, IT IS RECOMMENDED THAT THE CUSTOMER SHOULD HAVE AN ALTERNATE LOCATION IDENTIFIED AND VIBRATION STUDIED.

TRANSIENT VIBRATION IS DIFFICULT TO ASSESS IF THE DETAILS OF THE TRANSIENT VIBRATION IS NOT UNDERSTOOD. THE 0.0005 g, ZERO TO PEAK TRIGGER LEVEL IS A STARTING POINT TO BEGIN UNDERSTANDING THE VIBRATION STABILITY. THE TRANSIENT VIBRATION PEAK AMPLITUDE, STRUCTURAL (TIME VARIANT) RESPONSE, DECAY RATE AND AN ESTIMATE OF THE NUMBER OF EVENTS PER UNIT TIME WOULD CONSTITUTE A COMPLETE TRANSIENT ANALYSIS. ALL TRANSIENT FAILURES MUST BE SUPPORTED BY TIME HISTORY PLOTS. THE PLOTS MUST CLEARLY SHOW THE STRUCTURAL RESPONSE, THE FREQUENCY OF THE SIGNATURE AND THE DECAY RATE. FROM THIS DATA, GE CAN HELP DETERMINE COMPLIANCE TO THE VIBRATION GUIDELINES.

TEST CONSULTANT MUST PROVE DESIGN RECOMMENDATIONS FOR ALL SITES/BUILDING STRUCTURES WHICH ARE FOUND TO EXCEED THE SPECIFICATIONS.

PRESENTATION/INTERPRETATION OF RESULTS (1.4)

THE RECOMMENDED FORMAT FOR SITE VIBRATION DATA COLLECTION, PRESENTATION, AND ANALYSIS IS ILLUSTRATED IN THE EXAMPLES SHOWN IN ILLUSTRATIONS 1.1 THROUGH 1.4. IN THE PRE-INSTALLATION MANUAL. PRESENTATION OF THE DATA IN ANY OTHER FORMAT (LINEAR UNITS ONLY) MAY RESULT IN AN INCORRECT INTERPRETATION AND DIAGNOSIS OF THE SITE. ADDITIONAL DATA COLLECTION OR PRESENTATION METHODS IS AT THE OPTION OF THE VIBRATION TESTING SERVICE.

IT IS THE RESPONSIBILITY OF THE CUSTOMER'S VIBRATION TESTING SERVICE TO INTERPRET THE RESULTS AND DETERMINE IF THAT SITE MEETS GE'S SPECIFICATIONS. ILLUSTRATIONS A-1 AND A-2 ARE EXAMPLES PROVIDED TO ASSIST A TEST CONSULTANT IN THE USE OF GE STEADY STATE SPECIFICATIONS (VIBRATION SPECIFICATIONS ABOVE AMBIENT BASELINE). IF THE VIBRATION LEVELS ARE TOO HIGH, ADDITIONAL DATA ACQUISITION MAY BE NECESSARY TO:

- DETERMINE THE SOURCE OF THE VIBRATION
- PROPOSE A SOLUTION TO THE PROBLEM
- FIND AN ALTERNATE SITE LOCATION.

ILLUSTRATIONS A-3 AND A-4 IN THE PRE-INSTALLATION MANUAL ARE EXAMPLES PROVIDED TO ASSIST A TEST CONSULTANT IN THE USE OF GE TRANSIENT SPECIFICATIONS. THE **500 MICRO-G, ZERO TO PEAK TRIGGER LEVEL** IDENTIFIES DATA COLLECTION TO BEGIN ASSESSMENT OF THE SITE VIBRATION ANALYSIS. THE RESPONSE OF THE TRANSIENT MUST BE ASSESSED RELATIVE TO THE STEADY STATE VIBRATION SPECIFICATIONS IN SECTION SPECIFICATIONS.

ANY QUESTIONS REGARDING TEST EQUIPMENT REQUIREMENTS, TEST PARAMETERS, OR GENERAL QUESTIONS SHOULD BE DISCUSSED WITH YOUR GE PROJECT MANAGER OF INSTALLATIONS.

FLOOR MOUNTING DETAIL: MAGNET

M6640
 REV. DATE: 05.SEP.12

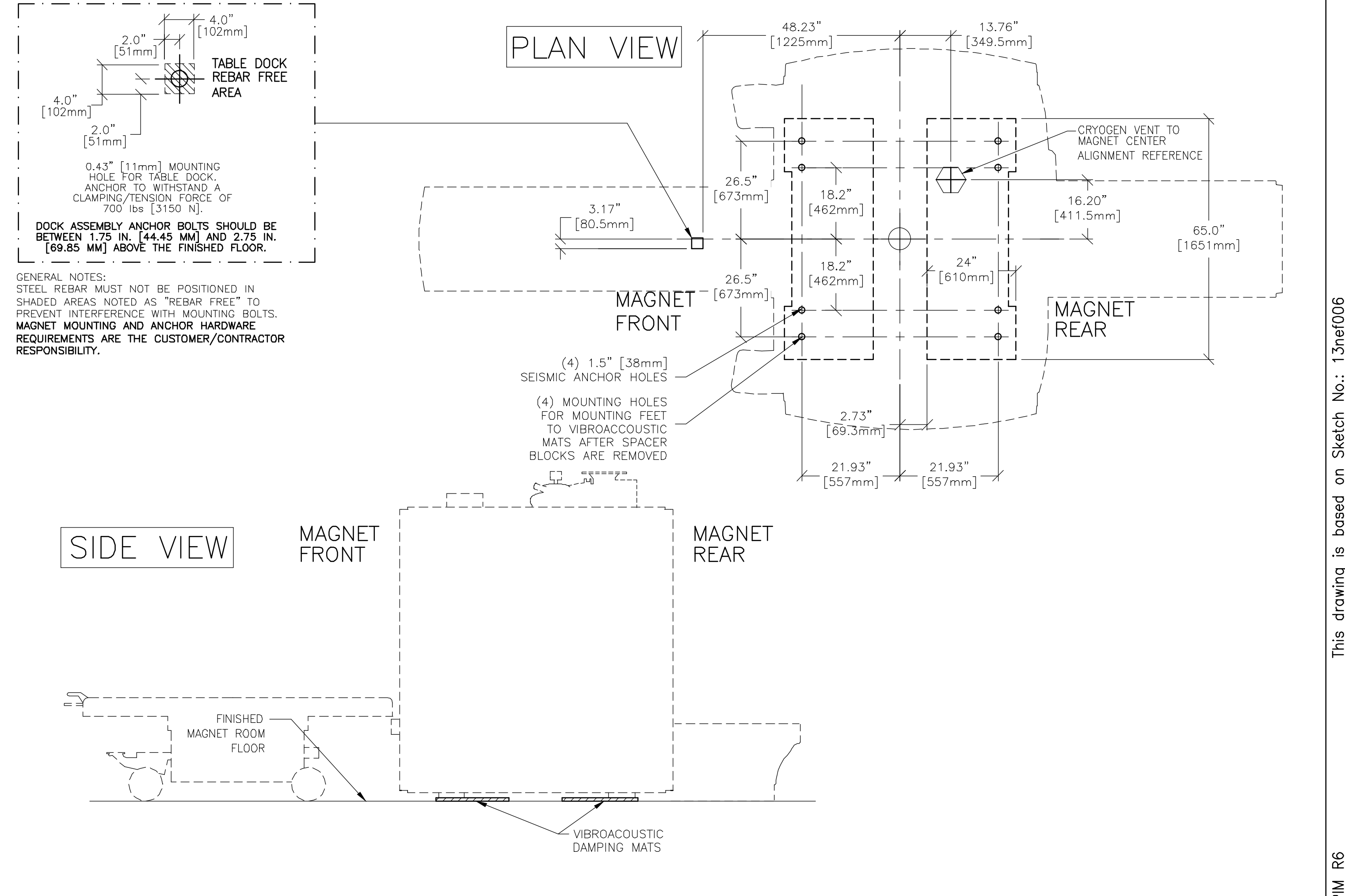


TABLE DOCK ATTACHMENT METHODS

THRU-BOLT

ANCHOR

Labels: DOCK, CLAMP BRACKET, FINISHED FLOOR OR GROUT, FILLER BOARD OR GROUT, RF SHIELD, CONDUCTIVE FIBEROUS WASHER (RF SEAL), CONCRETE, FEMALE ANCHOR INSERT.

ENVIRONMENTAL STEEL LIMITS

A STATIC MAGNETIC FIELD EXTENDS IN A THREE-DIMENSIONAL SPACE AROUND THE MAGNET ISOCENTER. ENVIRONMENTAL STEEL WITHIN THE STATIC MAGNETIC FIELD AFFECTS THE UNIFORMITY (OR HOMOGENEITY) OF THE FIELD. FIELD UNIFORMITY IS CRITICAL TO BOTH IMAGE QUALITY AND CHEMICAL SHIFT ANALYSIS (SPECTROSCOPY). AN ANALYSIS OF THE ENVIRONMENTAL STEEL IS REQUIRED WITHIN A 9.84 FEET (3 METERS) SPHERICAL RADIUS OF THE MAGNET ISOCENTER. ENVIRONMENTAL STEEL INCLUDES PIPES, BEAMS, CONCRETE REBAR, OR ANY OTHER STRUCTURAL STEEL IN THE FLOORS, WALLS, OR CEILING.

MAGNET TYPE	LIMITS OF STEEL MASS LBS/SQ FT [KG/SQ M]	DISTANCE FROM MAGNET ISOCENTER IN [MM]	DISTANCE BELOW TOP SURFACE OF FLOOR IN [MM]
1.5T	0 [0]	0-45 [0-1143]	0-3 [0-76]
ACTIVE	2 [9.8]	45-47 [1143-1194]	3-5 [76-127]
SHIELD	3 [14.7]	47-52 [1194-1321]	5-10 [127-254]
SEE NOTES	8 [39.2]	52-55 [1321-1397]	10-13 [254-330]
	20 [98.0]	55+ [1397+]	13+ [330+]

NOTE THE FOLLOWING ITEMS MUST BE LIMITED PER THE ABOVE TABLE

- NON-MOVABLE STEEL CONSTRUCTION MATERIAL SUCH AS WALL STUDS OR HVAC COMPONENTS.
- METALLIC PIPES AND DRAINS.
- STEEL IN THE FLOOR IN A 10 FOOT BY 10 FOOT (3.1 METER BY 3.1 METER) AREA DIRECTLY BELOW THE MAGNET.

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

GE Healthcare

Healthcare Project Implementation - Design Center
 Milwaukee, Wisconsin

SHEET TITLE: STRUCTURAL DETAILS
 MODALITY TYPE: OPTIMA MR450W

THIS PLAN IS SUBMITTED TO SUBMIT LOCATION OF GE HEALTHCARE EQUIPMENT AND ASSOCIATED ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. IN PREPARING THIS PLAN, EVERY EFFORT HAS BEEN MADE TO CONFORM TO ALL APPLICABLE CODES AND REGULATIONS. THE COMPANY ASSUMES NO LIABILITY FOR ANY CONSTRUCTION DEFECTS. THE COMPANY CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

PROJECT TITLE:
ORTHOPAEDIC ASSOCIATES OF PORTLAND
 PORTLAND, MAINE

This drawing is based on Sketch No.: 1.3nef006

PROJECT	REVISION
130261	00

DATE: 22.Jan.13
 DRAWN BY: TMS
 CHECKED BY: PMM
 CON NO.: 4057873
 CON DT: 16.Jan.13

REVISION HISTORY:

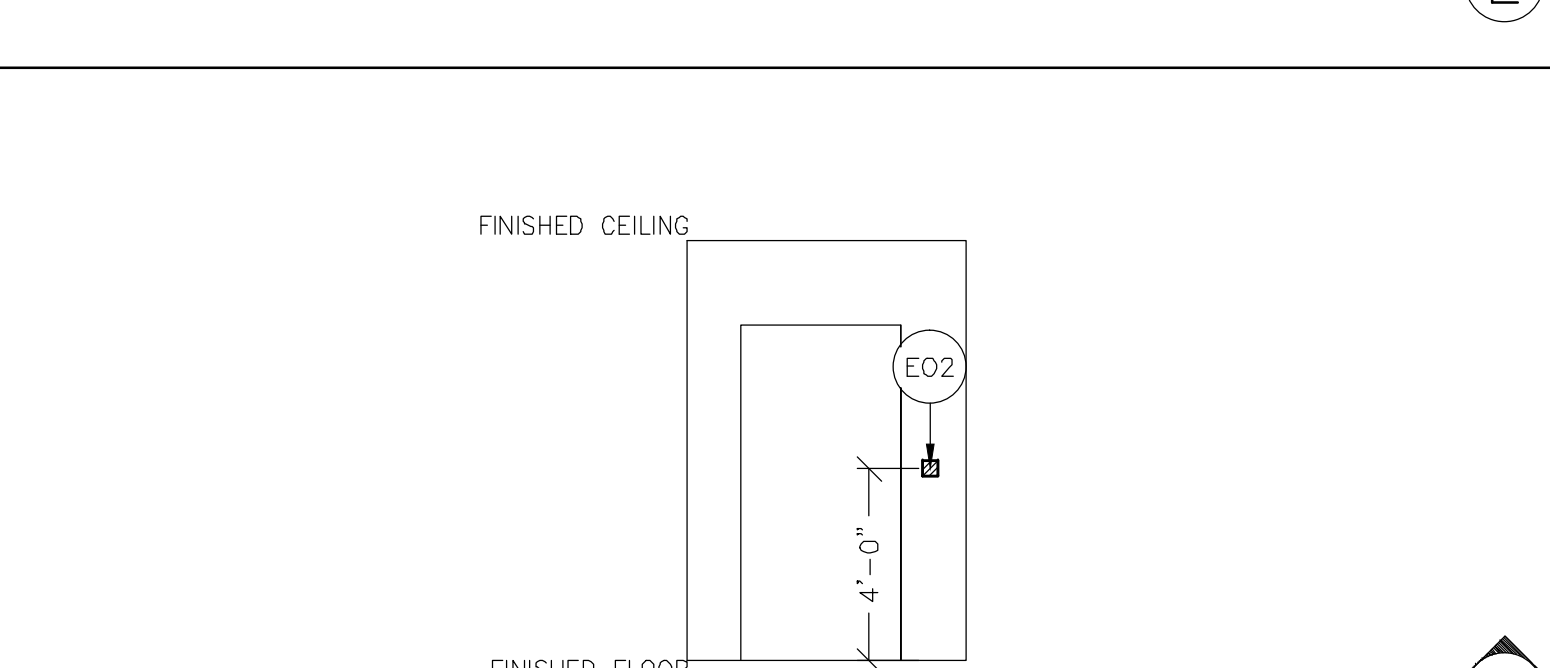
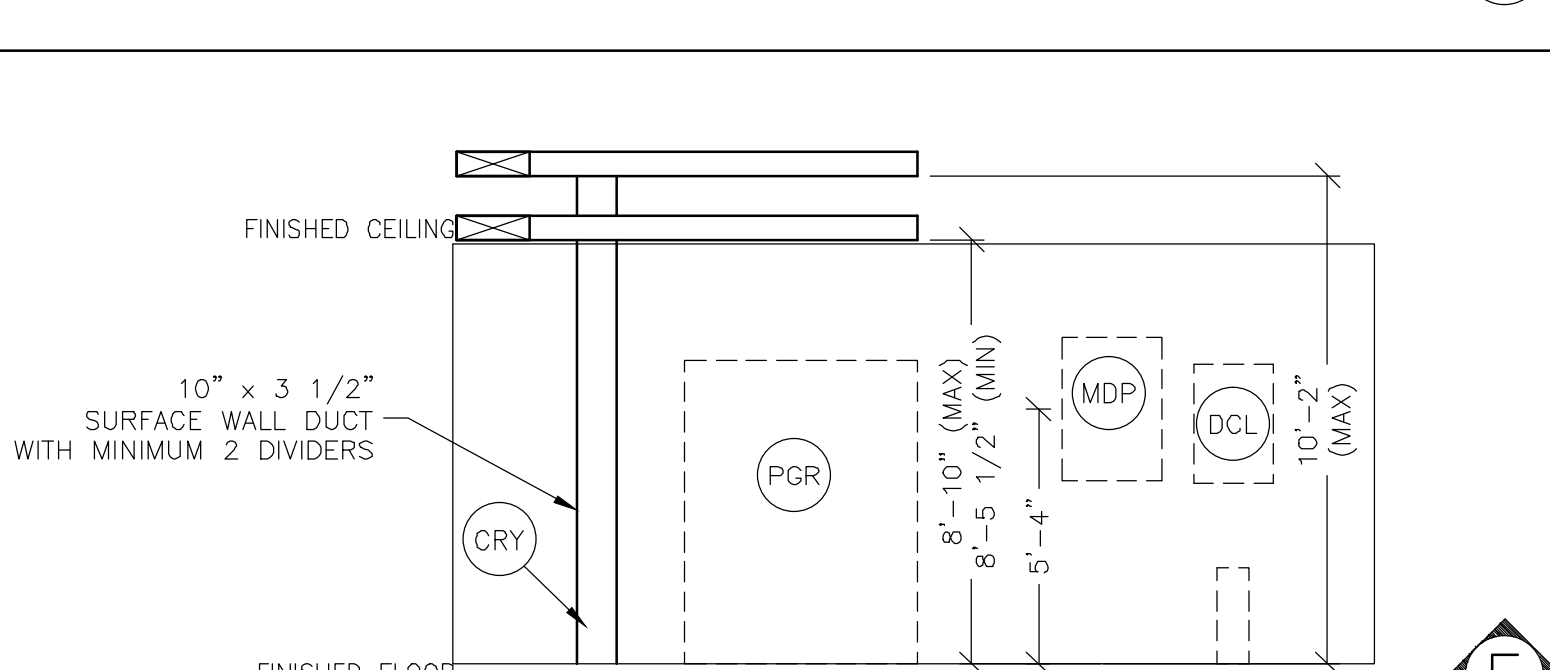
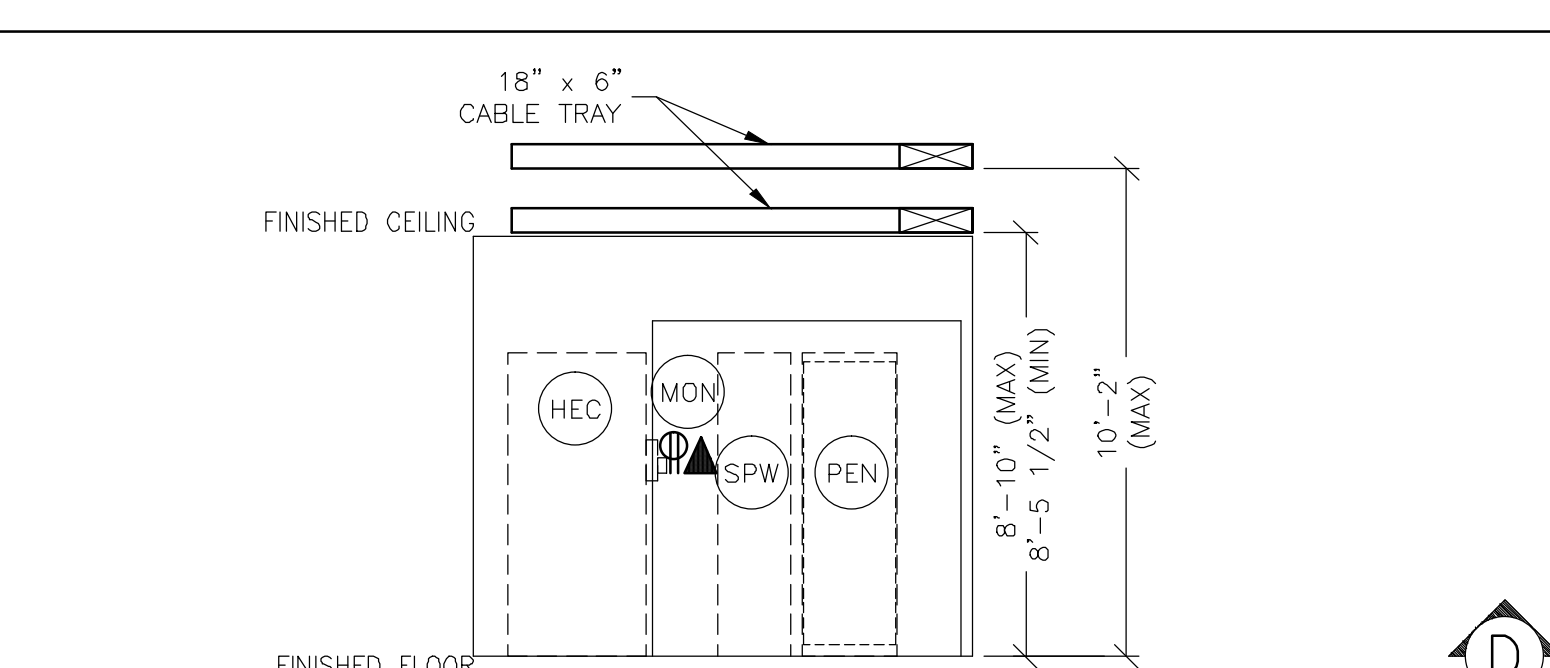
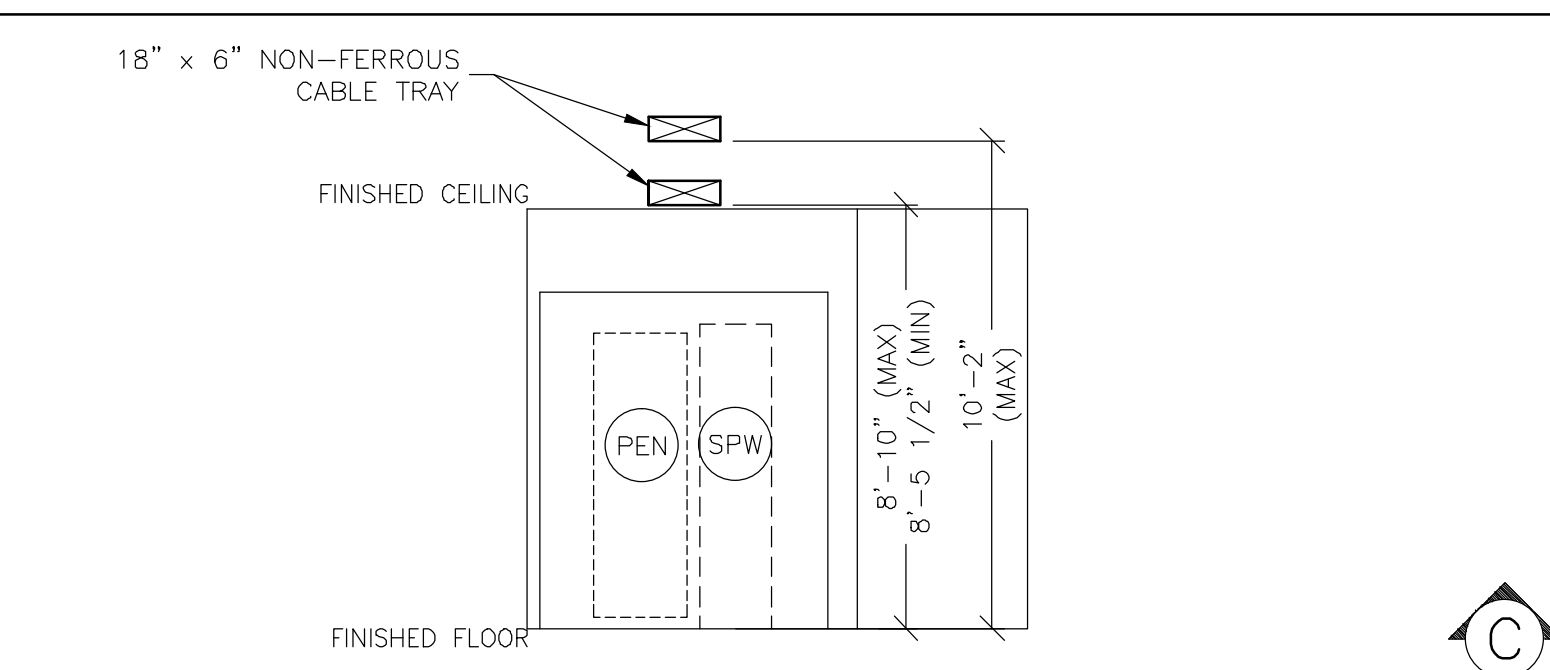
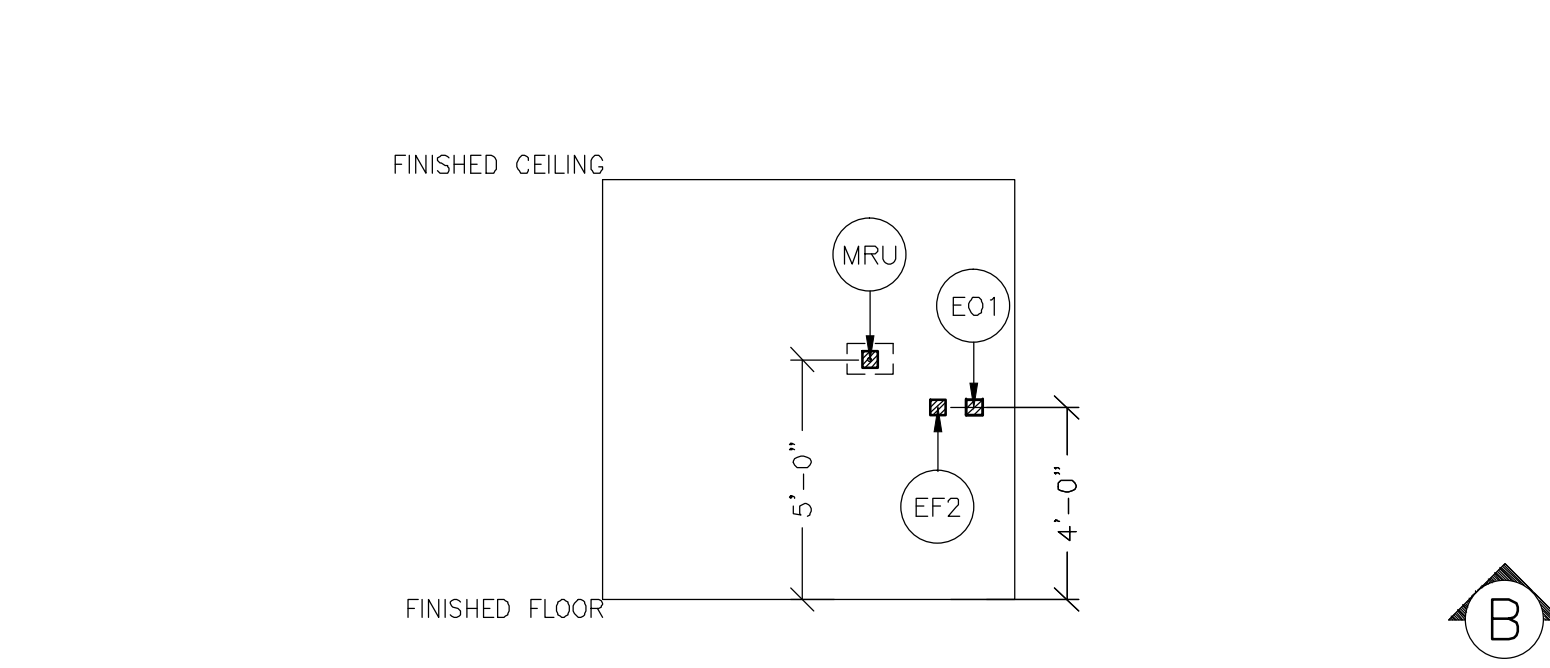
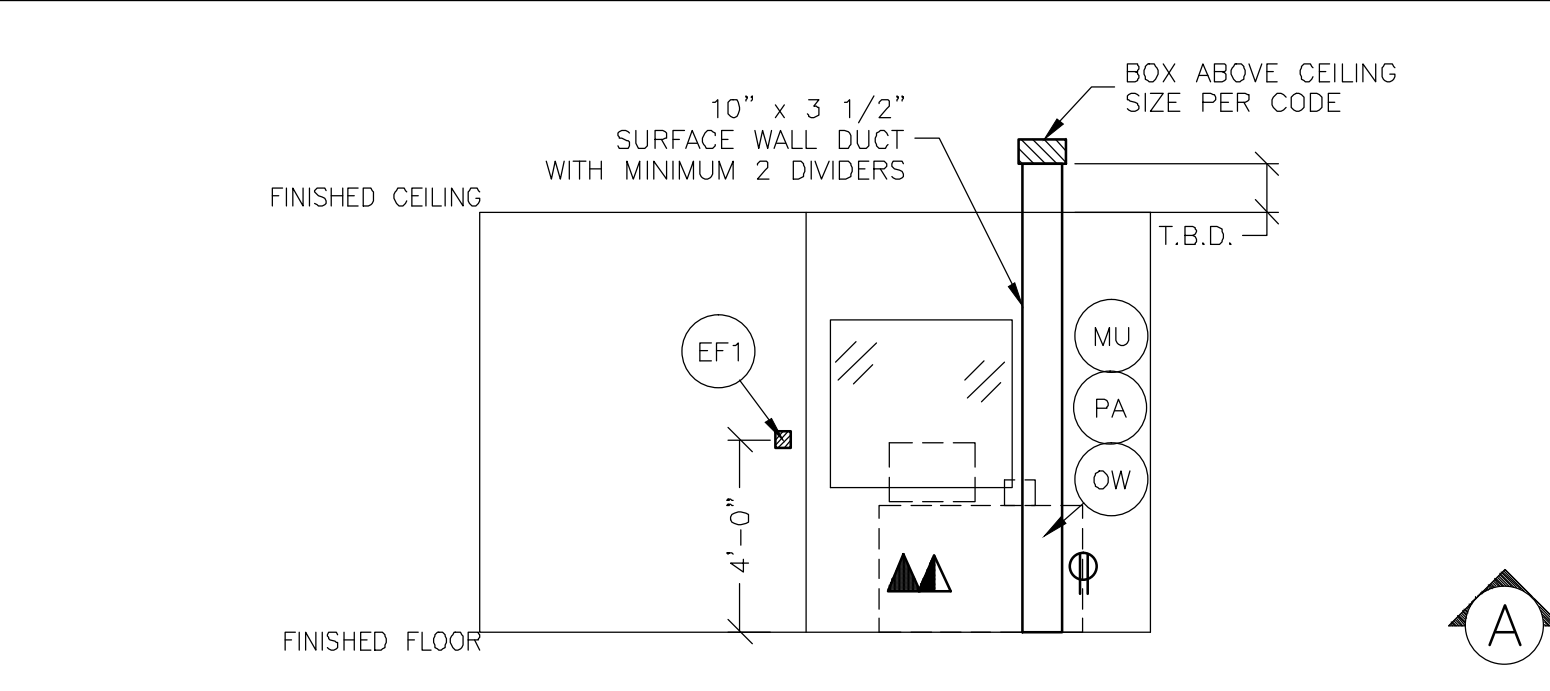
SHEET
S2

PIM R6
 RQ - 132725

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

ELECTRICAL PLAN

RECOMMENDED CEILING HEIGHT = 8'-9"



FEEDER TABLE - DISCOVERY/OPTIMA

• 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 PGR USING 1/2" AWG.
 • THE GROUNDING CONDUCTOR () SHALL BE COPPER AND WILL RUN IN THE SAME CONDUIT AS THE FEEDERS FROM EQUIPMENT BACK TO THE ROOM POWER SOURCE GROUNDING POINT.
 • 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 PGR OR HEC CABINET.
 • MINIMUM WIRE SIZE FOR CIRCUIT BREAKER, BASED ON RECOMMENDED OVERCURRENT PROTECTION.
 • FOR A FULL SYSTEM UPS REFER TO ELECTRICAL DETAILS FOR UPS FEEDER WIRES.

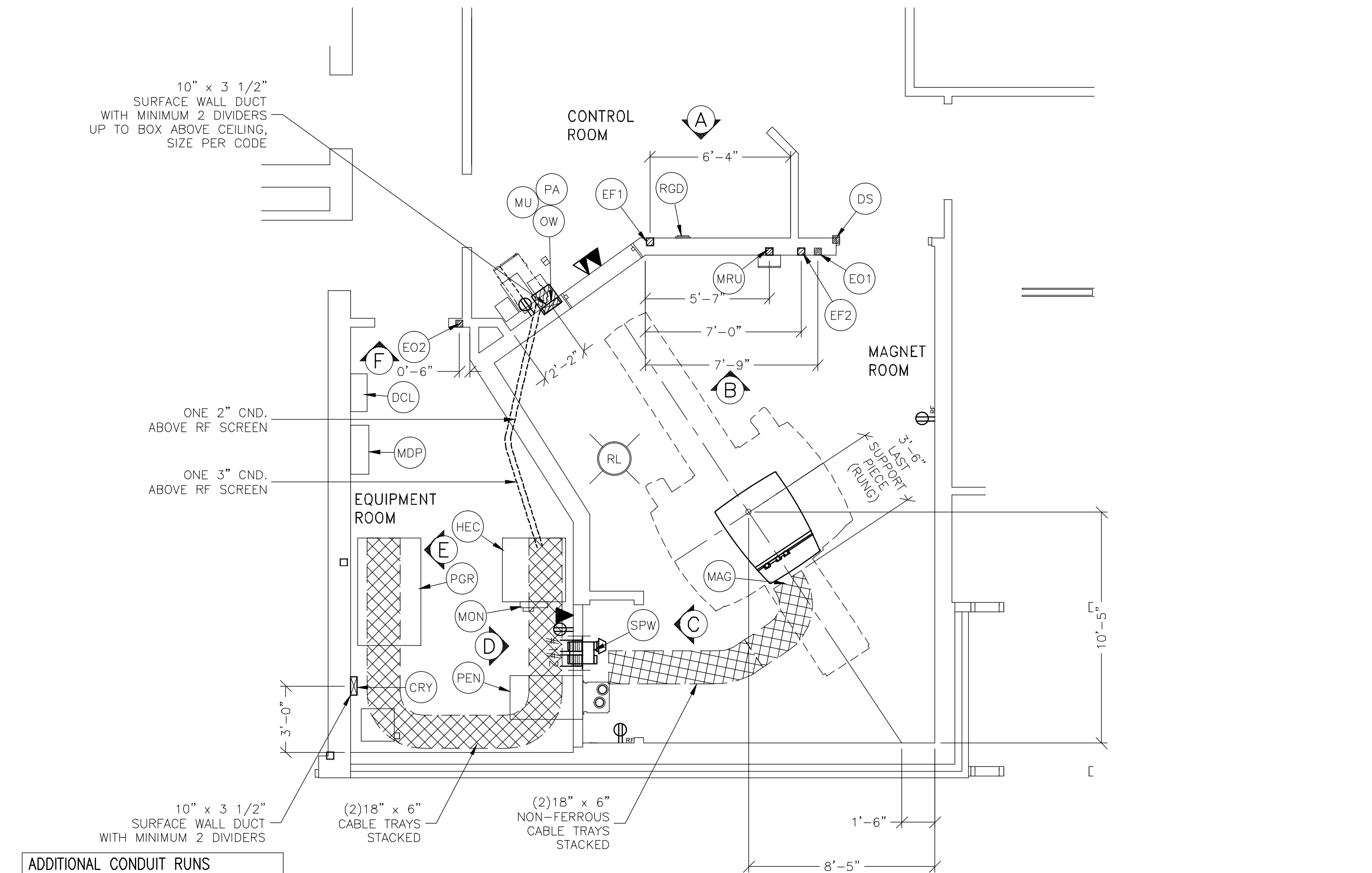
RUN LENGTH IN FEET	342-418 380				360-440 400				374-456 415				432-528 480			
	FEEDER	GROUND	FEEDER	GROUND	FEEDER	GROUND	FEEDER	GROUND	FEEDER	GROUND	FEEDER	GROUND	FEEDER	GROUND		
100	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)		
150	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)		
200	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)		
250	4/0	(2)	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)	3/0	(4)		
300	250M	(2)	4/0	(2)	4/0	(2)	4/0	(2)	3/0	(4)	3/0	(4)	3/0	(4)		
350	300M	(2)	300M	(2)	250M	(2)	250M	(2)	3/0	(4)	3/0	(4)	3/0	(4)		
400	400M	(1/0)	350M	(2)	300M	(2)	300M	(2)	4/0	(2)	4/0	(2)	4/0	(2)		
450	500M	(1/0)	400M	(1/0)	350M	(2)	350M	(2)	4/0	(2)	4/0	(2)	4/0	(2)		

REV. DATE: 03/02/11

PLEASE SEE BELOW FOR ADDITIONAL REQUIRED CONDUIT RUNS AND SIZES.

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:
 1. DUCTWORK SHALL BE METAL WITH DIVIDERS AND HAVE REMOVABLE, ACCESSIBLE COVERS.
 2. DUCTWORK SHALL BE CERTIFIED/RATED FOR ELECTRICAL POWER PURPOSES.
 3. DUCTWORK SHALL BE ELECTRICALLY AND MECHANICALLY BONDED TOGETHER IN AN APPROVED MANNER.
 4. PVC AS A SUBSTITUTE MUST BE USED IN ACCORDANCE WITH ALL LOCAL AND NATIONAL CODES.
 • ALL OPENINGS IN 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 THIN 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.



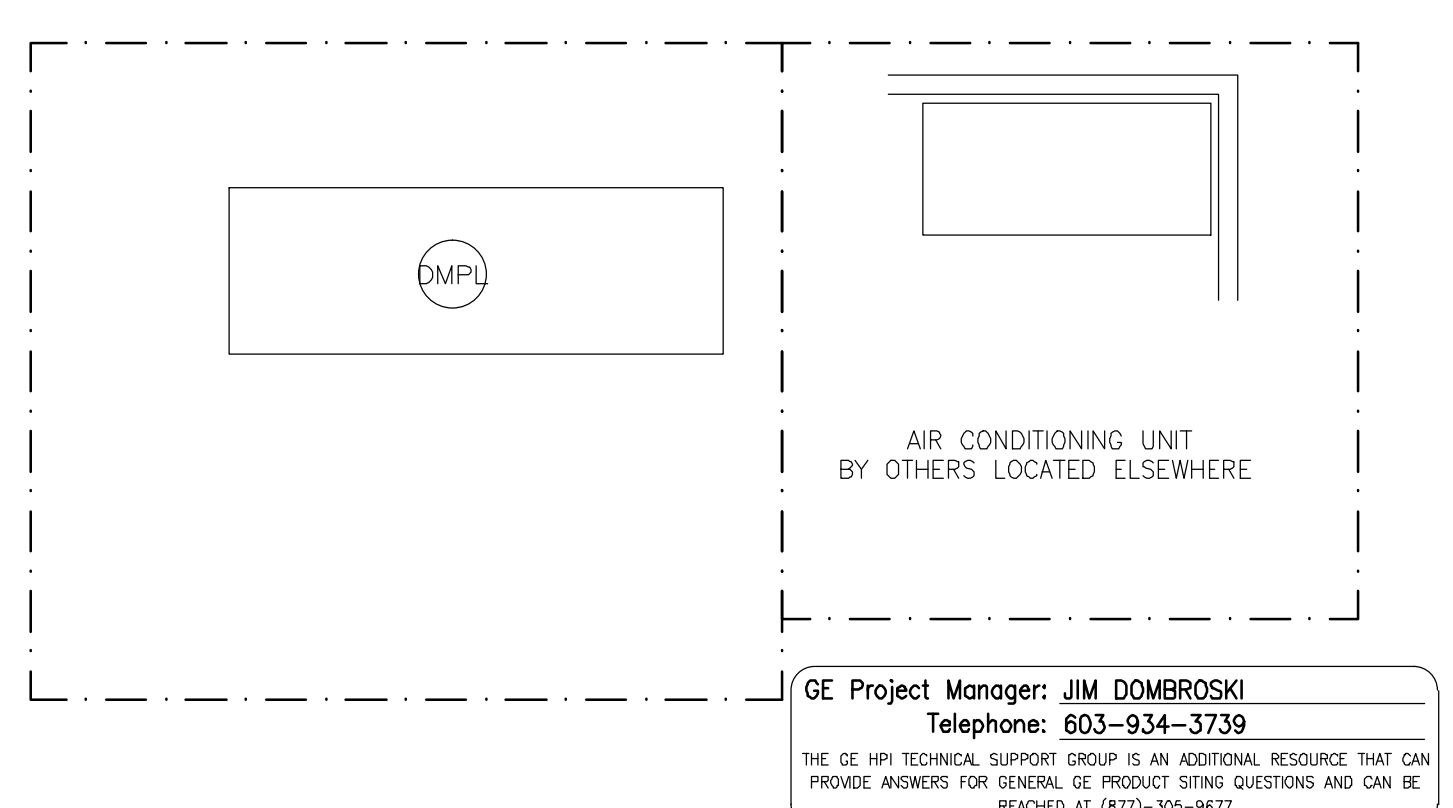
ADDITIONAL CONDUIT RUNS (CONTRACTOR SUPPLIED AND INSTALLED)

REV DATE: 140211

CONDUITS REQUIRED FOR BASE SYSTEM	TO	FROM	AS REQ'D
MDP	TO	FEEDER	ONE CND. AS REQ'D
MDP	TO	PGR	ONE CND. AS REQ'D
MDP	TO	HEC	ONE CND. AS REQ'D
MDP	TO	E02	ONE 1/2" CND.
E02	TO	SPW	ONE 1/2" CND.
DS	TO	PGR	ONE 3/4" CND.
E01	TO	SPW	ONE 3/4" CND.
MRU	TO	PEN	ONE 1" CND.
MRU	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

CONDUITS REQUIRED FOR Dimplex Chiller	TO	FROM	AS REQ'D
DMPL	TO	RGD	ONE 3/4" CND.
DMPL	TO	480-V 3Ø POWER	CONDUIT AS REQUIRED



GE Project Manager: JIM DOWBROSKI
 Telephone: 603-934-3739
 THE GE HR TECHNICAL SUPPORT GROUP IS AN ADDITIONAL RESOURCE THAT CAN PROVIDE ANSWERS FOR GENERAL GE PRODUCT SIZING QUESTIONS AND CAN BE REACHED AT (877)-305-9677

JUNCTION POINT DESCRIPTIONS

THE FOLLOWING MATERIALS ARE TO BE SUPPLIED AND INSTALLED BY THE CUSTOMER'S ELECTRICAL CONTRACTOR

DESCRIPTION	QTY.	HARDWARE	DETAIL NO., SHT. E3
CRY SHIELD COOLER CABINET	1	32 IN. OF GROMMET MATERIAL FOR AN 8" X 8" IN. OPENING IN DUCT COVER	ELEC-6
DCL DC LIGHTING	1	SEE DETAILS	ELEC-54
DMPL DIMPLEX CHILLER	1	BOX AS REQUIRED	
DS RF DOOR SWITCH	1	SINGLE GANG BOX RF DOOR SWITCH RATED FOR 64 VOLTS AND 750 MILLIAMPERES. NORMALLY OPEN (OFF) WHEN DOOR IS OPEN	ELEC-55
EF1 RF EXHAUST FAN SWITCH	1	COVERPLATE SINGLE GANG BOX SINGLE POLE SWITCH	ELEC-55
EF2 RF EXHAUST FAN SWITCH	1	COVERPLATE SINGLE GANG BOX SINGLE POLE SWITCH	ELEC-55
E01 EMERGENCY OFF BUTTON	1	SINGLE GANG BOX	ELEC-16
E02 EMERGENCY OFF BUTTON	1	SINGLE GANG BOX	ELEC-16
HEC HEAT EXCHANGER CABINET	1	GROMMET MATERIAL 36 IN. FLEXIBLE POWER LINE SERVICE LOOPS	
MAG MAGNET	1	GROMMET MATERIAL	
MDP MAIN DISCONNECT	1	200-AMP PANEL INCLUDED IN ORDER PUSHBUTTONS AND COVERS INCLUDED	ELEC-152
MON MAGNET MONITOR	1	FITTINGS AS REQUIRED	
MRU MAGNET RUNDOWN UNIT	1	4 X 4 X 2 IN. BOX COVERPLATE WITH 1 IN. KNOCKOUT IN CENTER	ELEC-8
MU MUSIC SYSTEM	1	SAME ROUTING AS OW	
OW OPERATOR WORKSPACE	1	12 IN. OF GROMMET MATERIAL FOR A 3 X 3 IN. OPENING IN DUCT COVER	ELEC-5
PA PATIENT ALERT CONTROL BOX	1	SAME ROUTING AS OW	
PEN RF PENETRATION PANEL CABINET	1	GROMMET MATERIAL	ELEC-153
PGR POWER GRADIENT, RF CABINET	1	GROMMET MATERIAL 6 FT. LENGTH OF SUITABLE FLEXIBLE METAL CONDUIT SUITABLE BUSHING & LOCKNUT	
RGD REMOTE DISPLAY	1	BOX AS REQUIRED	
RL MAGNET ROOM LIGHTS	1	LOCKNUT BOX AS REQUIRED INCANDESCENT LIGHT FIXTURE	
SPW RF PENETRATION PANEL	1	GROMMET MATERIAL	ELEC-166

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
RF FILTER > MRU	1-BLACK, 1-WHITE, 1-GREEN - (SIZE AS REQUIRED)
MDP > E02	1-BLACK, 1-RED, 1-GREEN - (SIZE AS REQUIRED)
480-V > MDP	3-BLACK, 1-WHITE, 1-GREEN - REFER TO FEEDER TABLE
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)
EMER PWR > CONVERTER	1-BLACK, 1-WHITE, 1-GREEN - (SIZE AS REQUIRED)
RF GND STUD > RF FILTER	1-GREEN (SIZE AS REQUIRED FOR EACH FILTER)
MDP > HEC	3-ND. 8 BLACK, 1-ND. 8 GREEN
MDP > PGR	3-ND. 1/0 BLACK, 1-ND. 1/0 GREEN
480-V > DMPL	2-BLACK, 1-GREEN - (SIZE AS REQUIRED)
RF FAN > EF1	1-BLACK, 1-WHITE - (SIZE AS REQUIRED)
EF1 > EF2	1-BLACK, 1-WHITE - (SIZE AS REQUIRED)

GE Healthcare
 Healthcare Project Implementation - Design Center
 Milwaukee, WI

SHEET TITLE: ELECTRICAL LAYOUT
 MODALITY TYPE: OPTIMA MR450W

THIS PLAN IS SUBMITTED TO SURVEY LOCATION OF GE HEALTHCARE EQUIPMENT AND ASSOCIATED APPARATUS. ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS IN PREPARING THIS PLAN, EVERY EFFORT HAS BEEN MADE TO CONFORM TO DETAILS AND DIMENSIONS SHOWN ON THIS PLAN. IT IS ADVISED THAT THE USER SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION. GE HEALTHCARE ASSOCIATES OF PORTLAND, MAINE CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

PROJECT TITLE:
ORTHOPAEDIC ASSOCIATES OF PORTLAND
 PORTLAND, MAINE

PROJECT	REVISION
130261	00

DATE: 22 Jan. 13
 DRAWN BY: TMS
 CHECKED BY: PMM
 CON NO.: 4057873
 CON DT: 16 Jan. 13

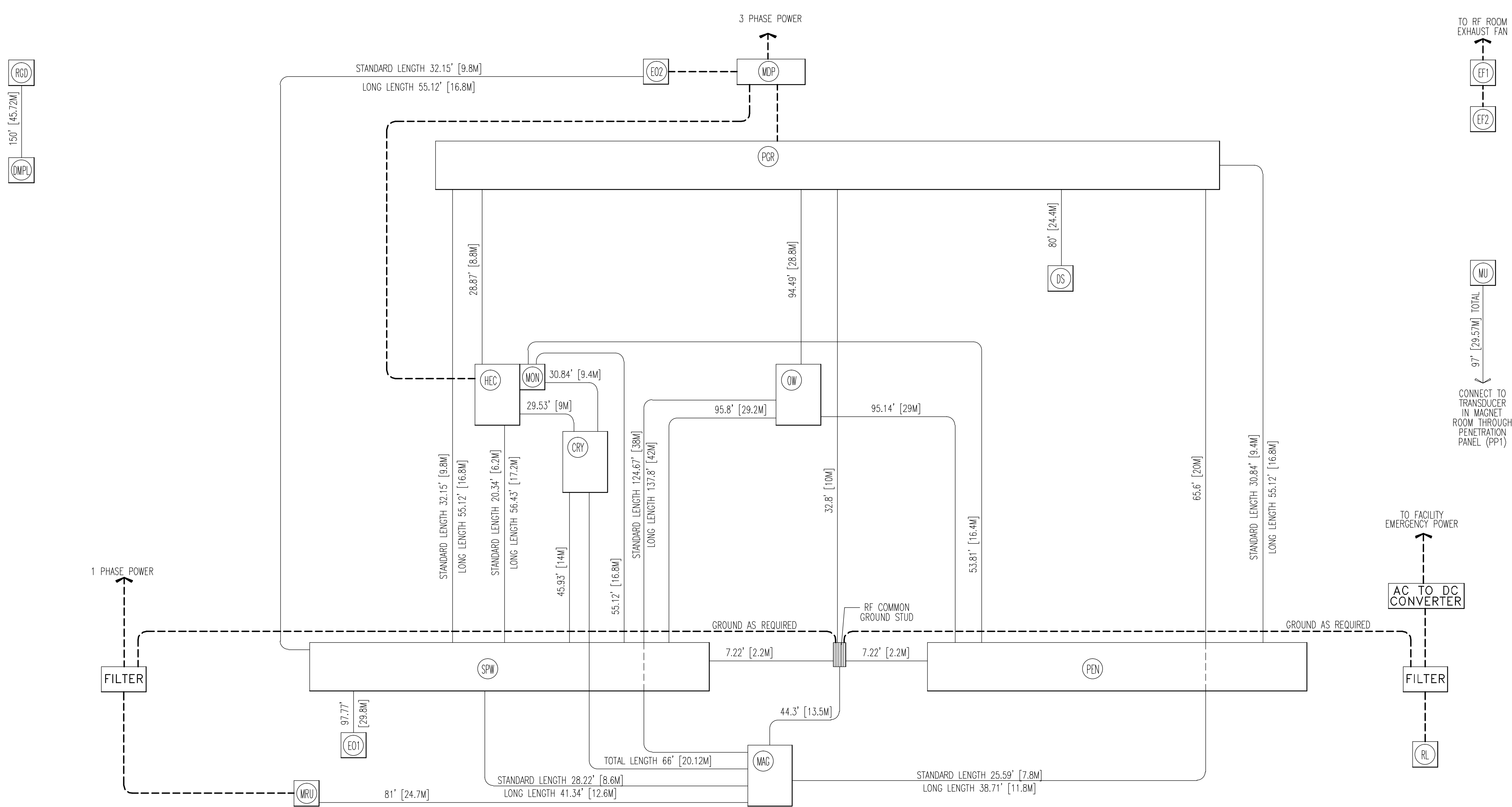
REVISION HISTORY:

NO.	DESCRIPTION

SHEET
E1

This drawing is based on Sketch No.: 1.3nef006
 PIM R6
 RQ - 132725

INTERCONNECT DIAGRAM



NOTE: CABLE LENGTH DATA
PLEASE REFER TO THE PRE-INSTALLATION MANUAL LISTED ON SHEET C1 FOR THE LENGTHS OF CABLES AVAILABLE FOR THIS SYSTEM

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

POWER SPECIFICATIONS

DISCOVERY/OPTIMA MR (REV. DATE 06.SEP.12)

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)	
		MAX MOMENTARY	CONTINUOUS
380	335-418	187	151
400	352-440	178	143
415	366-456	171	138
480	423-528	148	119

** 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 ABOVE OR BELOW NOMINAL WAVESHAVE FORM NOT TO EXCEED 200V 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 AVERAGED OVER 5 SECONDS = 123 KVA. 123 KVA CONSISTING OF 103 KVA FOR PDU + 20 KVA FOR HEC.

DEMAND	DISCOVERY/OPTIMA
kva*	123
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 225 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.
- NOTE 12: GEHC CONDUCTS POWER AUDITS TO VERIFY QUALITY OF POWER BEING DELIVERED TO THE SYSTEM. THE CUSTOMER'S ELECTRICAL CONTRACTOR IS REQUIRED TO BE AVAILABLE TO SUPPORT THIS ACTIVITY.

---	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
Healthcare Project Implementation - Design Center
Milwaukee, Wisconsin

SHEET TITLE: **ELECTRICAL SPECIFICATIONS**
MODALITY TYPE: **OPTIMA MR450W**
THIS PLAN IS SUBMITTED TO SUBMIT LOCATION OF GE HEALTHCARE EQUIPMENT AND ASSOCIATED ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. IN PREPARING THIS PLAN, EVERY EFFORT HAS BEEN MADE TO CONFORM TO ALL APPLICABLE ELECTRICAL CODES AND REGULATIONS. THE COMPANY CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

PROJECT TITLE:
ORTHOPAEDIC ASSOCIATES OF PORTLAND
PORTLAND, MAINE

PROJECT	REVISION
130261	00
DATE:	22.Jan.13
DRAWN BY:	TMS
CHECKED BY:	PMM
CON NO.:	4057873
CON DT.:	16.Jan.13

REVISION HISTORY:

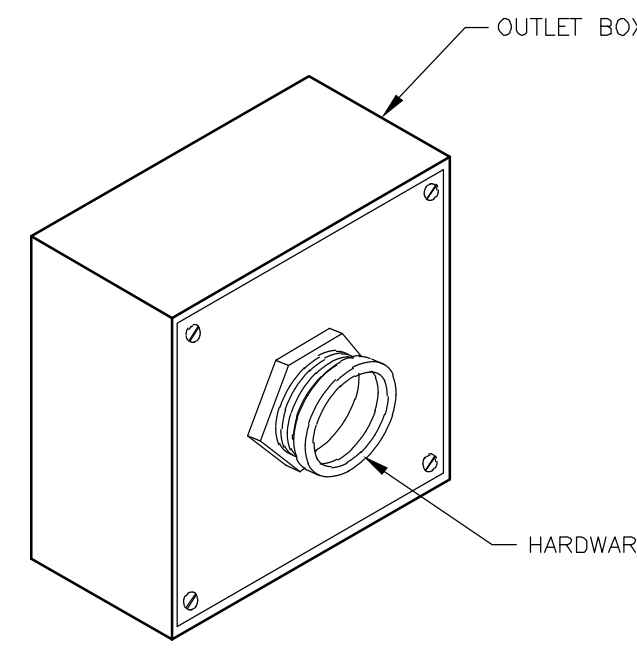
SHEET
E2

This drawing is based on Sketch No.: 1.3nef006
PIM R6 RQ - 132725

ELECTRICAL DETAIL
BOX WITH COVERPLATE (TYPICAL)

ELEC-8

REV. DATE: 09/30/94

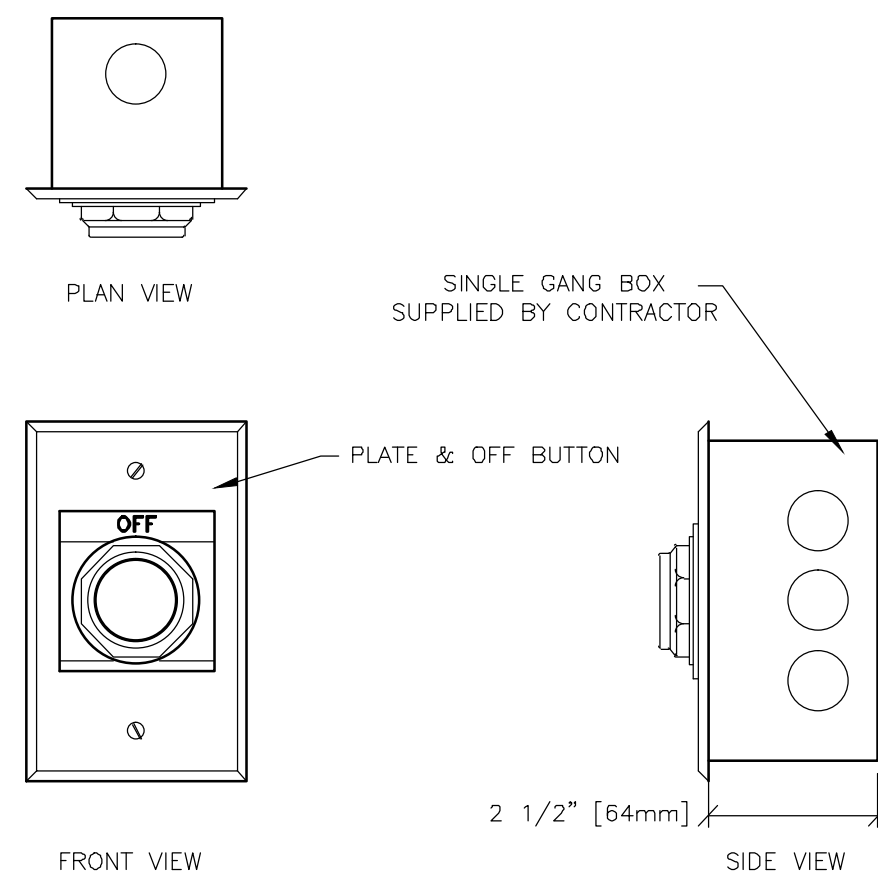


DETAIL NOT TO SCALE

ELECTRICAL DETAIL
EMERGENCY OFF BUTTON

ELEC-16

REV. DATE: 05/14/09

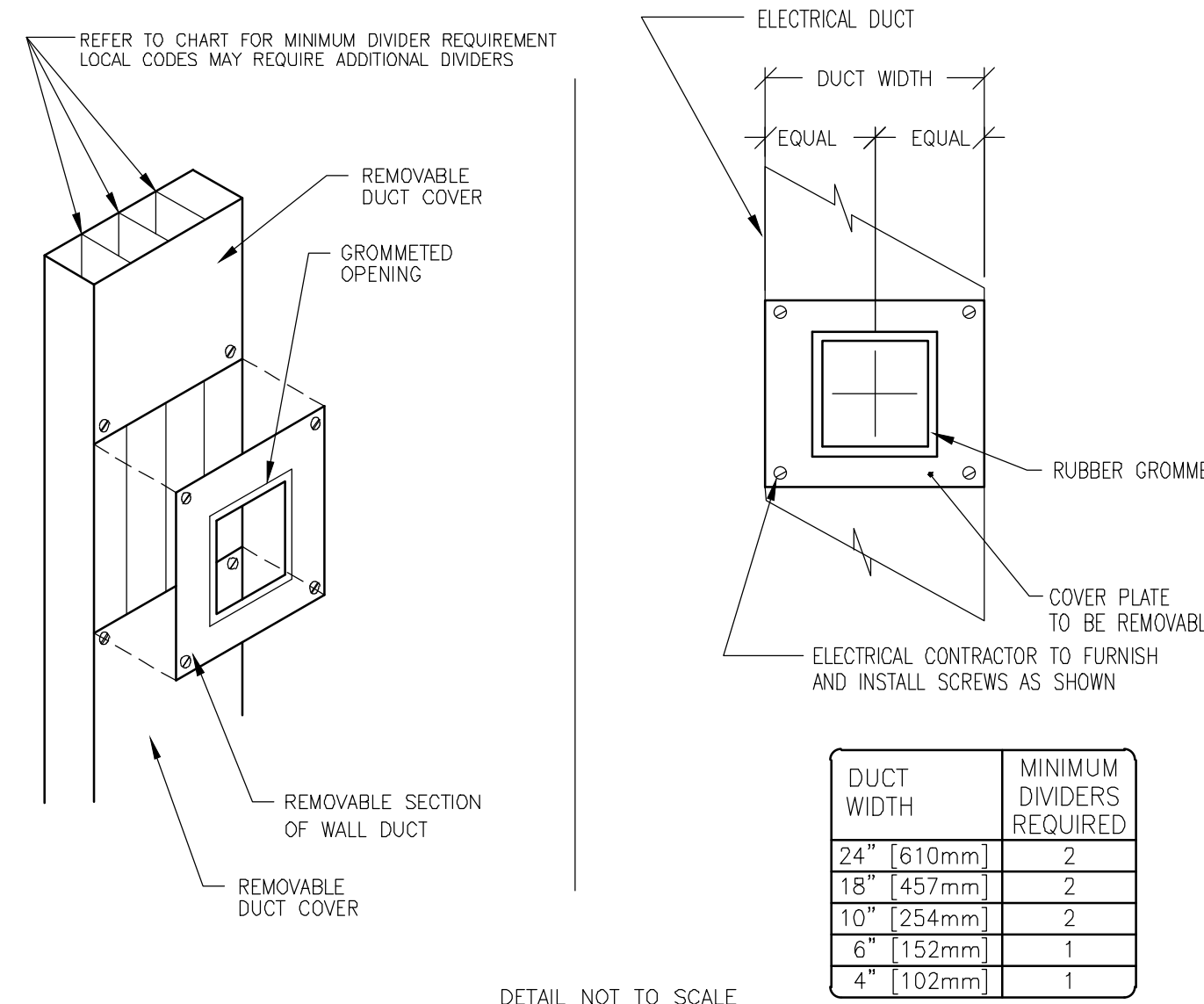


DETAIL NOT TO SCALE

ELECTRICAL DETAIL
VERTICAL WALL DUCT (TYPICAL)

ELEC-6

REV. DATE: 03/19/04



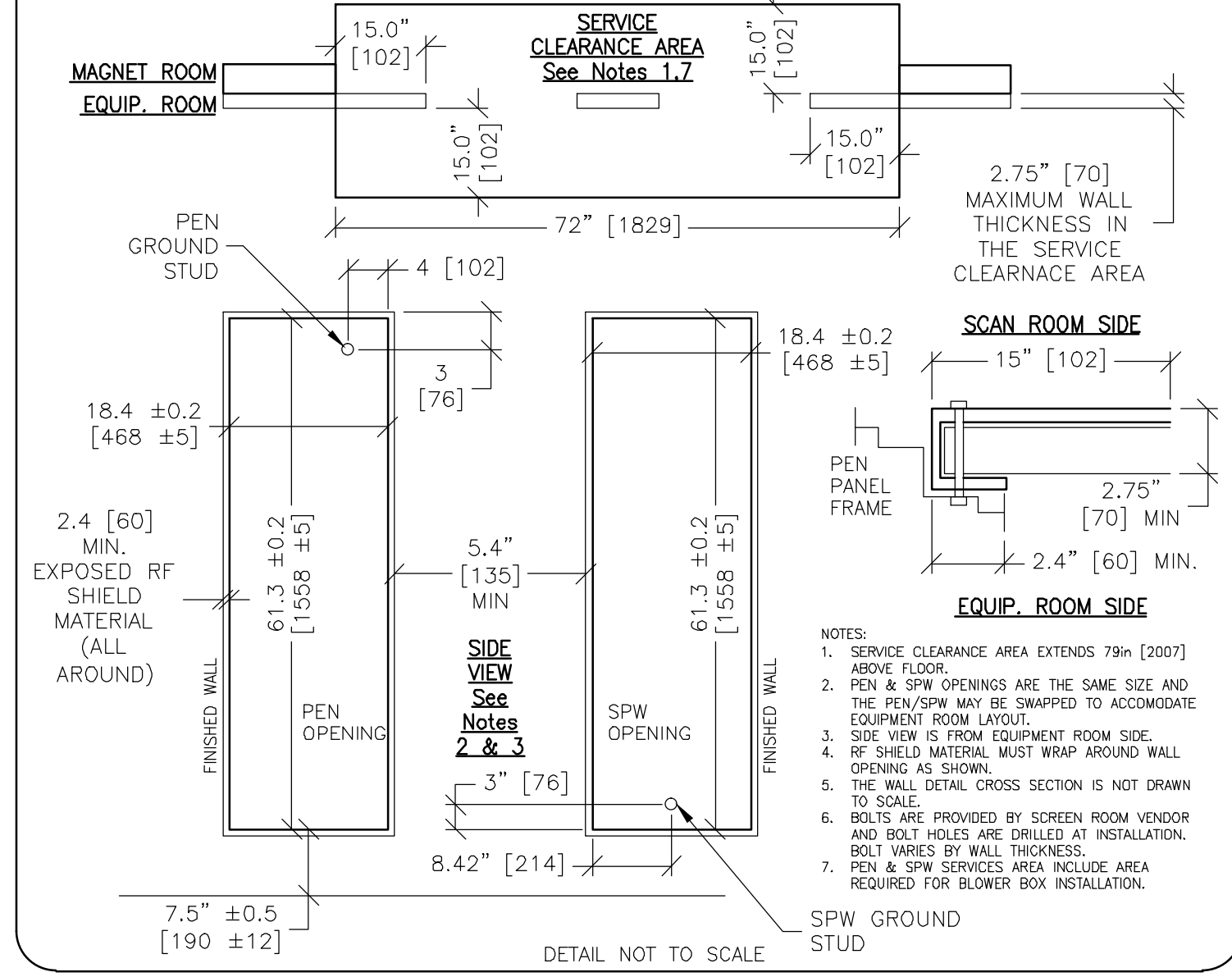
DETAIL NOT TO SCALE

DUCT WIDTH	MINIMUM DIVIDERS REQUIRED
24" [610mm]	2
18" [457mm]	2
10" [254mm]	2
6" [152mm]	1
4" [102mm]	1

EQUIPMENT DETAIL
PENETRATION BRACKET INSTALL

ELEC-153

REV. DATE: 12/18/10



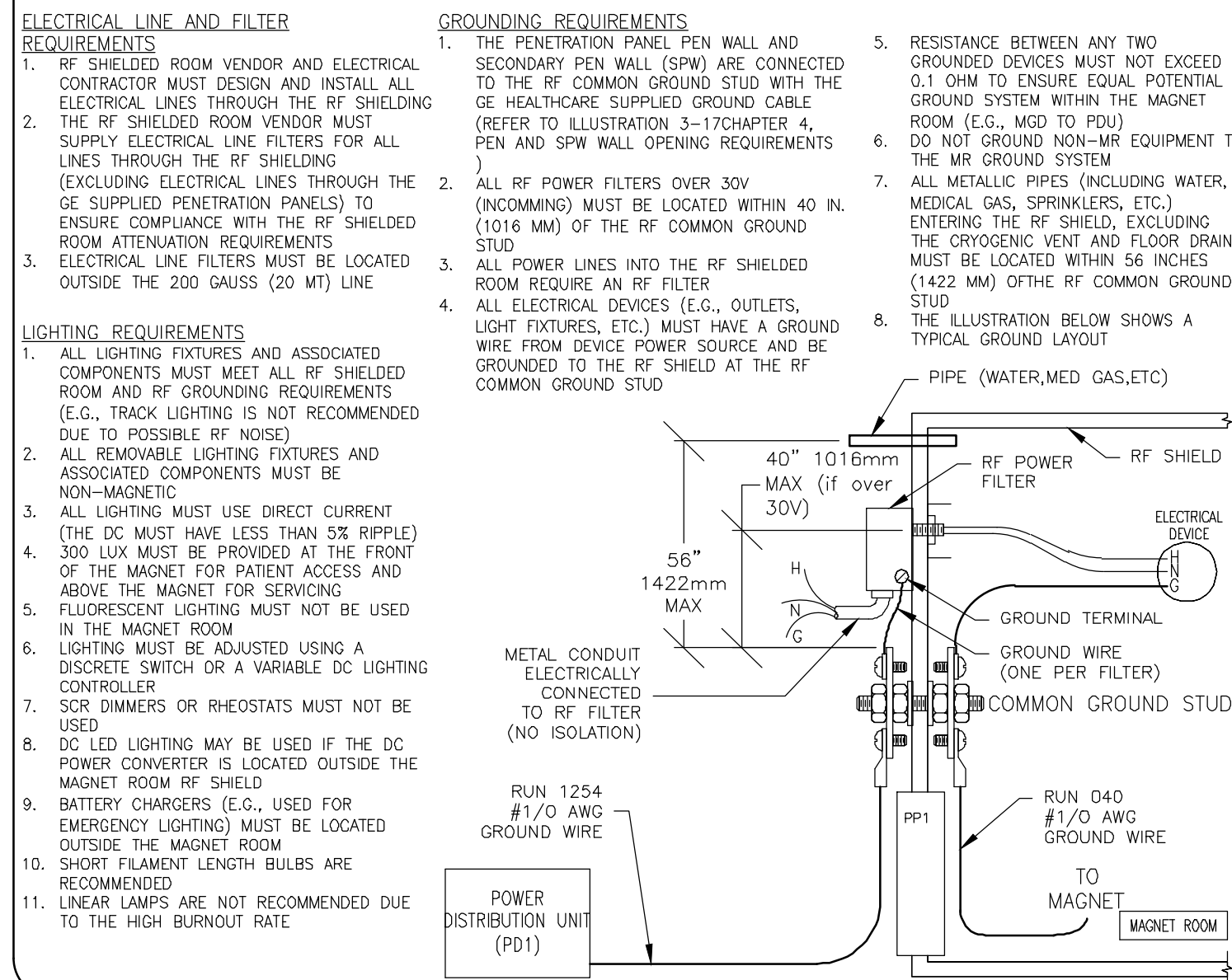
DETAIL NOT TO SCALE

- NOTES:
- SERVICE CLEARANCE AREA EXTENDS 78" [2007] ABOVE FLOOR.
 - PEN & SPW OPENINGS ARE THE SAME SIZE AND THE PEN/SPW MAY BE SWAPPED TO ACCOMMODATE EQUIPMENT ROOM LAYOUT.
 - SIDE VIEW IS FROM EQUIPMENT ROOM SIDE.
 - RF SHIELD MATERIAL MUST WRAP AROUND WALL OPENING AS SHOWN.
 - THE WALL DETAIL CROSS SECTION IS NOT DRAWN TO SCALE.
 - BOLTS ARE PROVIDED BY SCREEN ROOM VENDOR AND BOLT HOLES ARE DRILLED AT INSTALLATION. BOLT VARIES BY WALL THICKNESS.
 - PEN & SPW SERVICES AREA INCLUDE AREA REQUIRED FOR BLOWER BOX INSTALLATION.

ELECTRICAL DETAIL
TYPICAL MAGNET ROOM GROUNDING

ELEC-166

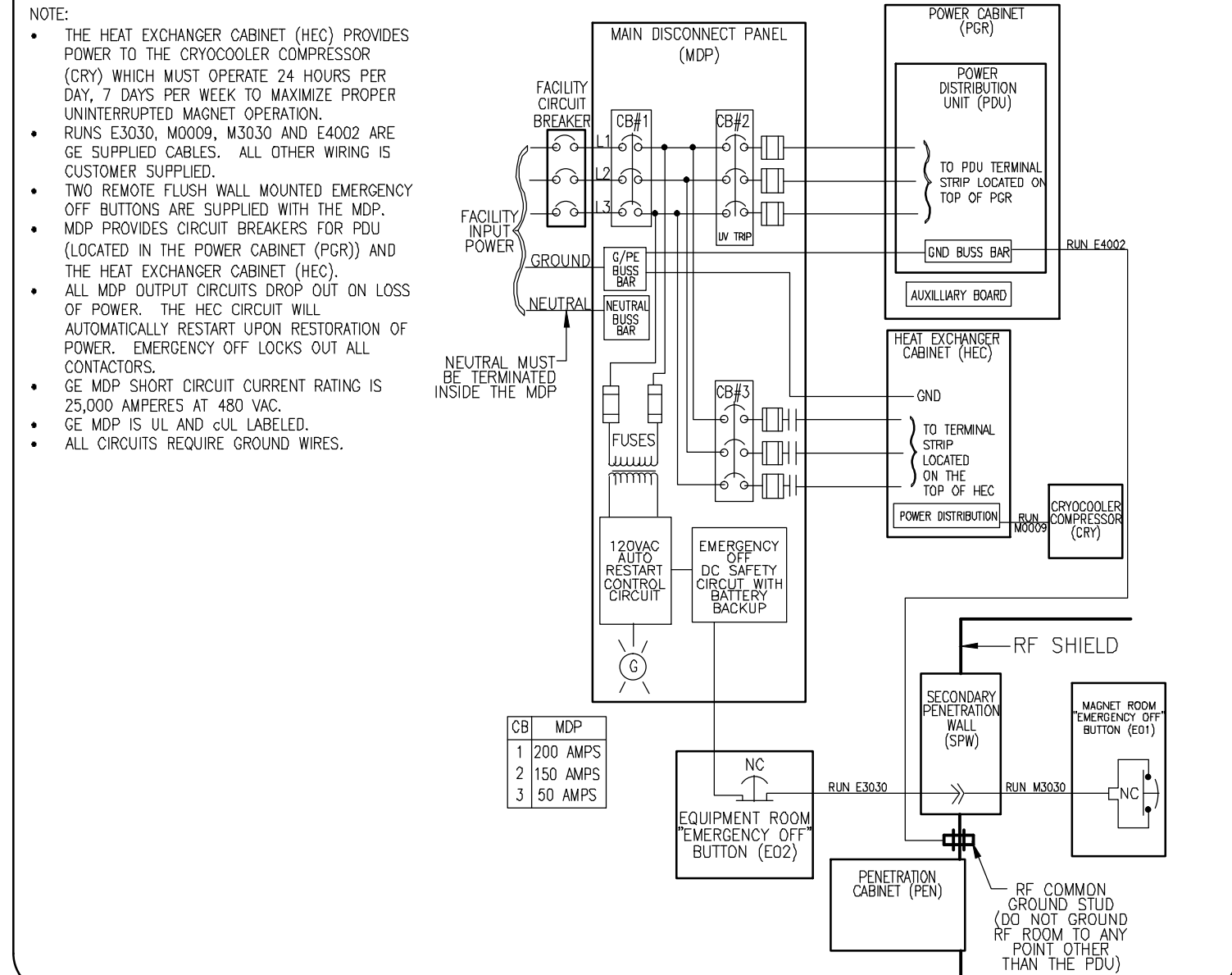
REV. DATE: 06/JUN.12



ELECTRICAL DETAIL
PROTECTIVE DISCONNECT SETUP

ELEC-152

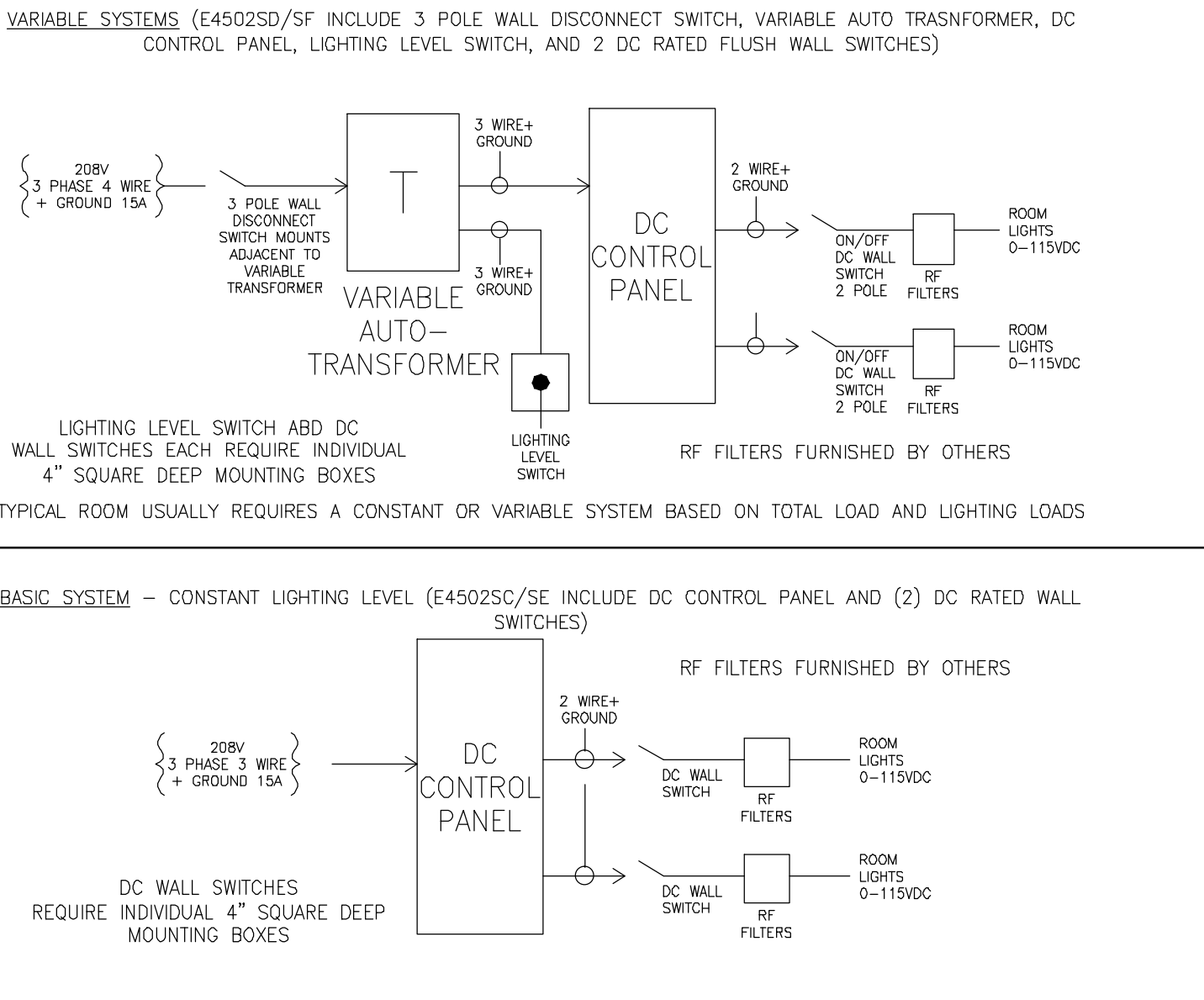
REV. DATE: 06/SEP.12



ELECTRICAL DETAIL
DC LIGHTING CONTROLLER SYSTEM DIAGRAM

ELEC-54

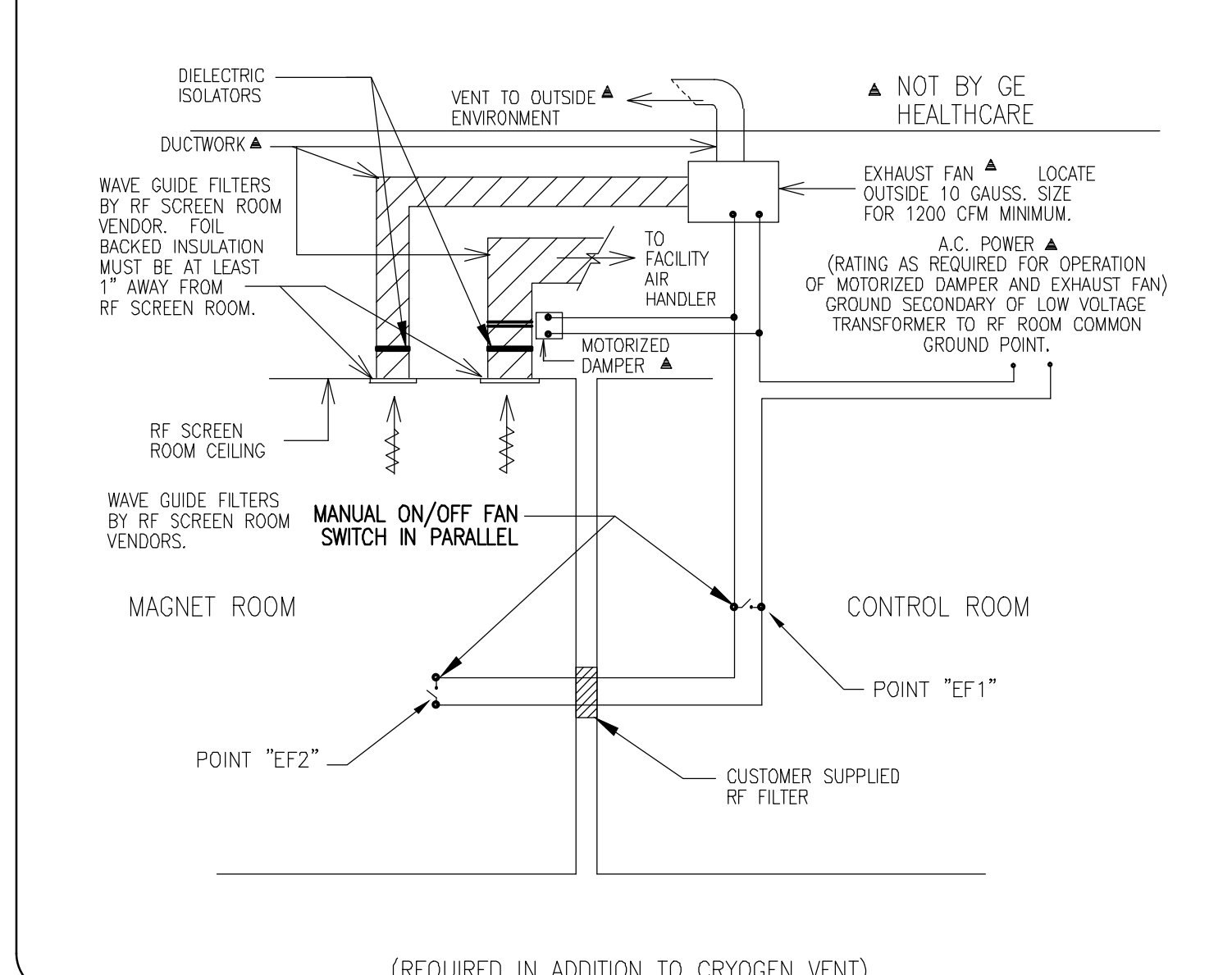
REV. DATE: 07/20/09



ELECTRICAL DETAIL
TYPICAL RF SCREEN ROOM EXHAUST FAN SET-UP

ELEC-55

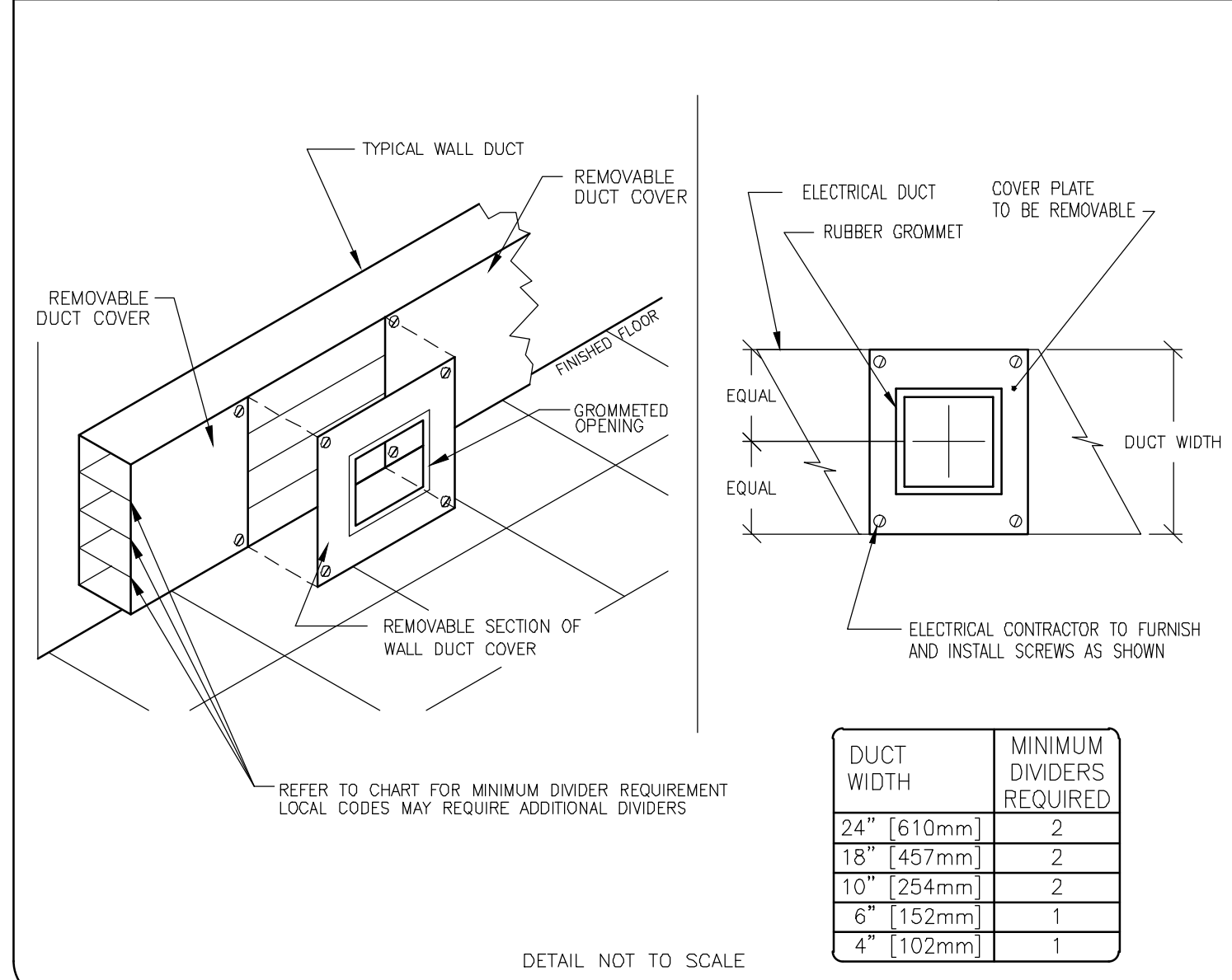
REV. DATE: 03/18/05



ELECTRICAL DETAIL
HORIZONTAL WALL DUCT (TYPICAL)

ELEC-5

REV. DATE: 03/19/04



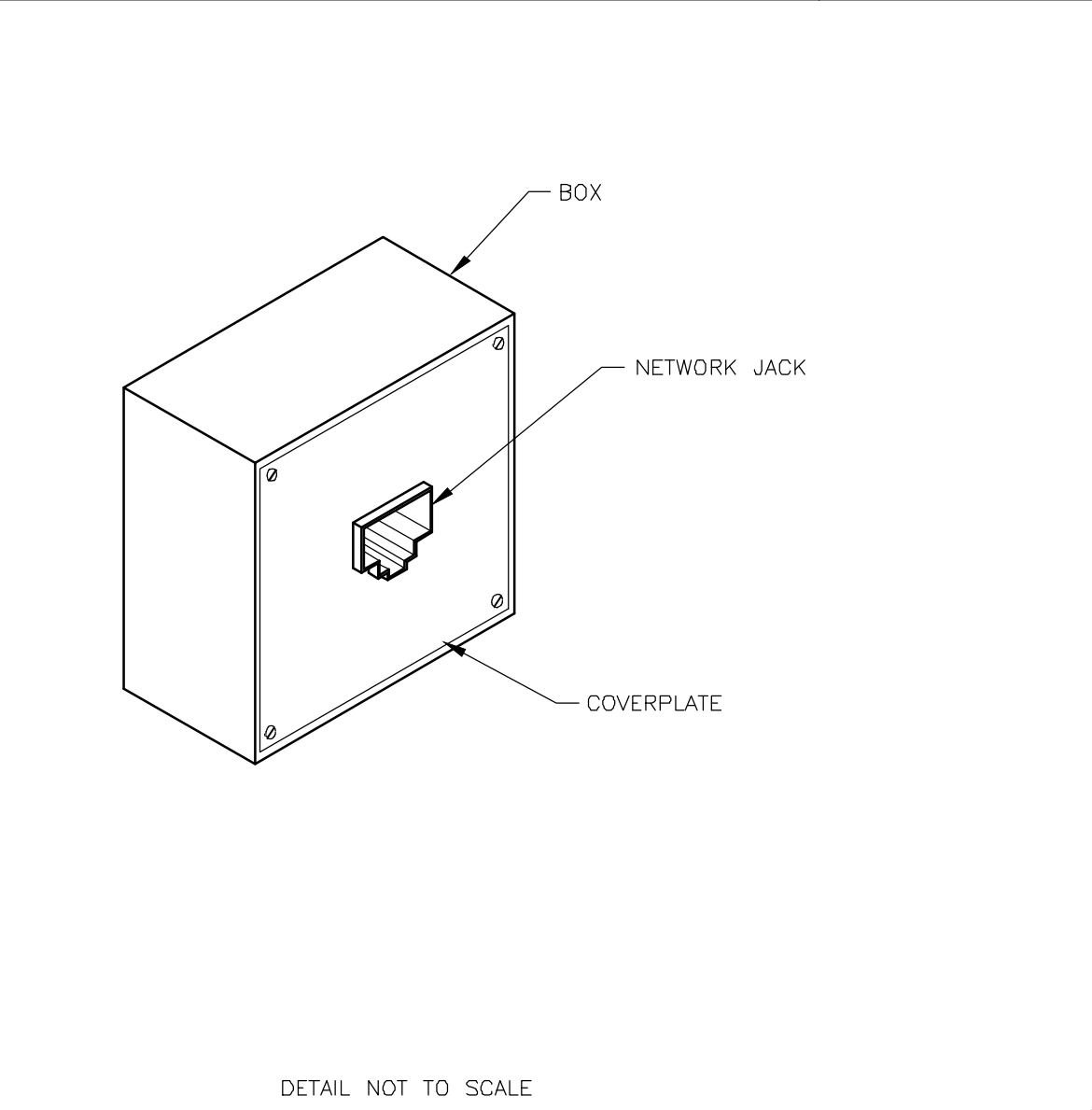
DETAIL NOT TO SCALE

DUCT WIDTH	MINIMUM DIVIDERS REQUIRED
24" [610mm]	2
18" [457mm]	2
10" [254mm]	2
6" [152mm]	1
4" [102mm]	1

ELECTRICAL DETAIL
BOX WITH COVERPLATE AND NETWORK JACK

ELEC-83

REV. DATE: 10/06/98

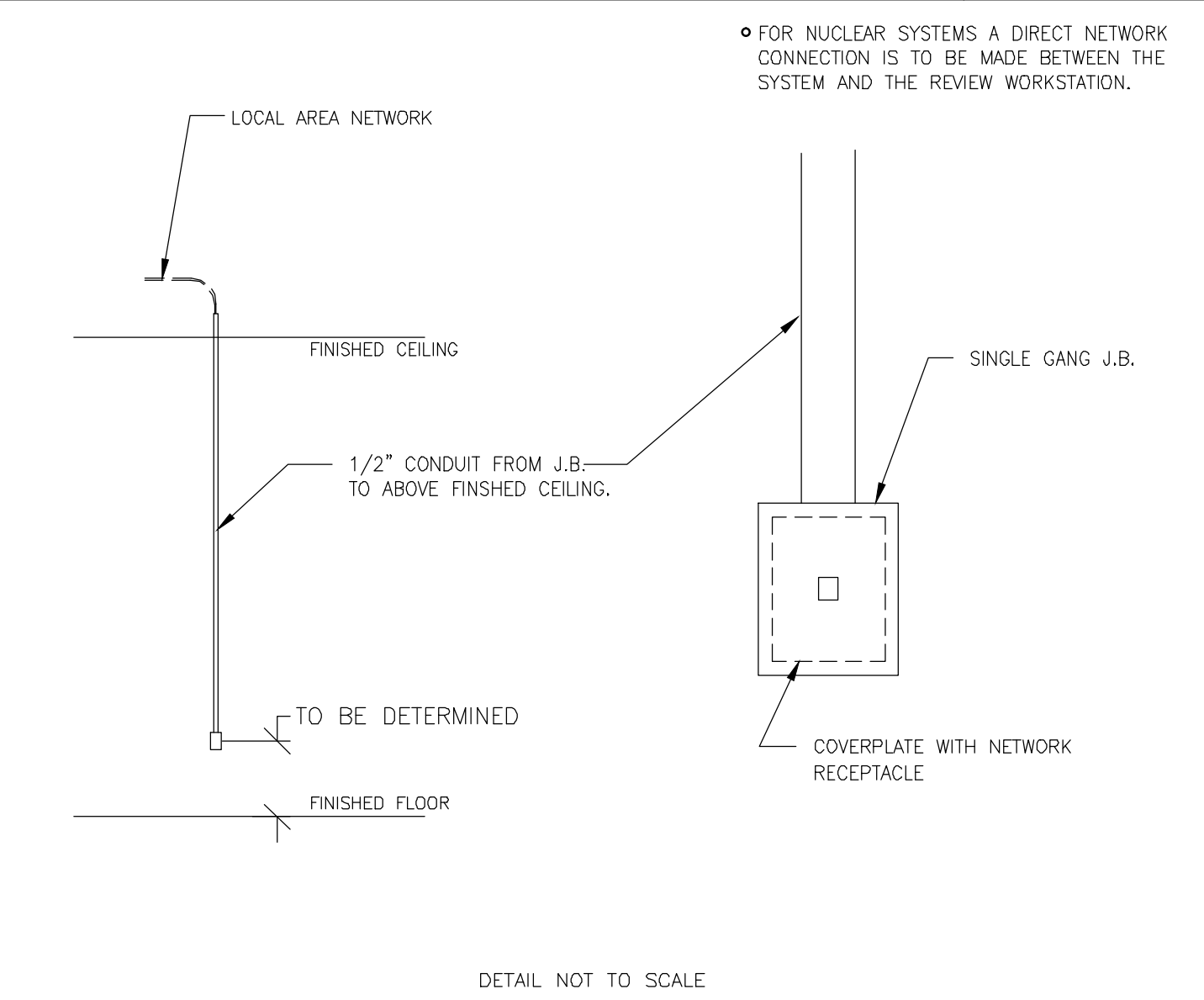


DETAIL NOT TO SCALE

ELECTRICAL DETAIL
NETWORK CONNECTION (TYPICAL)

ELEC-84

REV. DATE: 03/06/04



DETAIL NOT TO SCALE

GE Healthcare
Healthcare Project Implementation - Design Center
Milwaukee, Wisconsin

SHEET TITLE: ELECTRICAL DETAILS
MODALITY TYPE: OPTIMA MR450W
THIS PLAN IS SUBMITTED TO SUBMIT LOCATION OF HEALTHCARE EQUIPMENT AND ASSOCIATED ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. IN PREPARING THIS PLAN, EVERY EFFORT HAS BEEN MADE TO CONFORM TO ALL APPLICABLE REGULATORY REQUIREMENTS AND STANDARDS. THE COMPANY CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

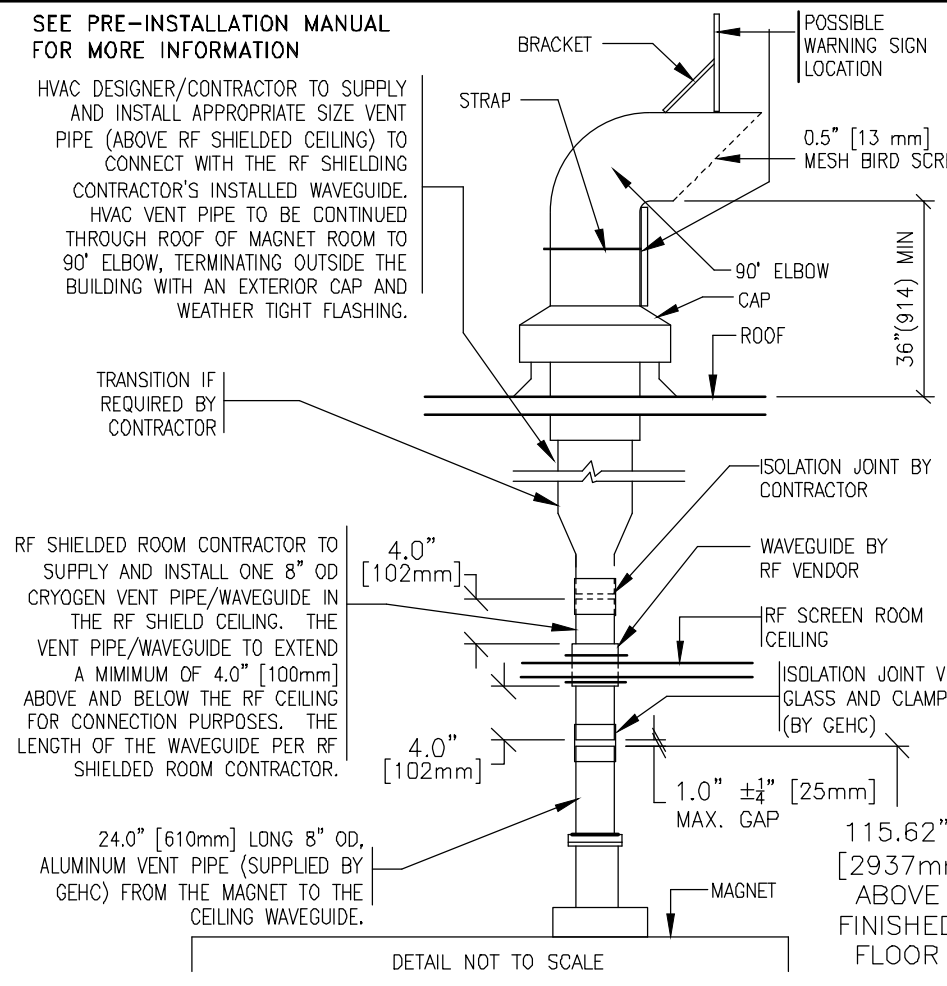
ORTHOPAEDIC ASSOCIATES OF PORTLAND
PORTLAND, MAINE

PROJECT TITLE: 130261
REVISION: 00
DATE: 22.Jan.13
DRAWN BY: TMS
CHECKED BY: PMM
CON NO: 4057873
CON DT: 16.Jan.13
REVISION HISTORY:
SHEET E3

This drawing is based on Sketch No.: 1.3nef006
PIM R6
RQ - 132725

TYPICAL CRYOGEN VENT PIPE DETAIL

MECH-01



REV. DATE: 05/04/10

CUSTOMER SUPPLIED WARNING SIGN TO READ:

CAUTION
FREEZING GASES AND SMALL OBJECTS MAY BE DISCHARGED WITHOUT NOTICE. STAY AT LEAST 20 FT (6.1 m) AWAY. *35FT (10.7M) FOR 3T

THIS SIGN MUST BE PLACED AT THE EXTERIOR EXIT POINT OF THE CRYOGEN VENT FOR THIS FACILITY. SEE TYPICAL CRYOGEN VENT PIPE DETAIL FOR POSSIBLE WARNING SIGN LOCATIONS.

THE FOLLOWING ARE MATERIALS THAT MUST BE USED FOR CONSTRUCTION OF THE VENT INSIDE THE MAGNET ROOM:
SS 304
AL 6061-T6
CU DWVM OR L

NOTE:
VENTILATORS AND CLAMPS FOR 8 IN. (203mm) DIAMETER PIPE SUPPLIED BY GENC.

NOTE:
THE VENT GLASS ISOLATION JOINT INSIDE THE MAGNET ROOM MUST BE A MAXIMUM OF 116" (2955) ABOVE THE FINISHED FLOOR.

NOTE:
USE SUPPLIES VENTILATORS & CLAMPS WHICH CAN BE USED FOR 8 IN. (203mm) DIAMETER PIPE ONLY. THESE MATERIALS MAY BE USED FOR ISOLATION JOINT OUTSIDE OF ROOM AT THE CONTRACTOR'S OPTION IF THE MATERIALS MEETS THE CONTRACTOR'S DESIGN REQUIREMENTS.

- THE MATING DIAMETERS MUST MATCH WITHIN ±0.125 IN (3mm)
- THE VENTILATORS MUST NOT BE USED FOR STRUCTURAL SUPPORT

CRYOGENIC VENT SYSTEM PRESSURE DROP MATRIX (A)

MECH-04

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

INSIDE DIAMETER OF VENT PIPE (in./mm)	DISTANCE OF VENT SYSTEM COMPONENT FROM MAGNET ROOM (ft./m)	PRESSURE DROP PER ELBOW USED ANYWHERE WITHIN 20 FT. VENT SEGMENT		STANDARD SWEEP ELBOW		LONG SWEEP ELBOW	
		STANDARD SWEEP ELBOW (psi / kPa)	LONG SWEEP ELBOW (psi / kPa)	STANDARD SWEEP ELBOW (psi / kPa)	LONG SWEEP ELBOW (psi / kPa)		
8(203)	0-20 (0-6.1)	0.10 (2.26)	1.10 (7.58)	2.06 (14.20)	0.55 (3.79)	1.03 (7.10)	1.03 (7.10)
	20-40 (6.1-12.2)	0.21 (4.75)	2.10 (14.48)	3.70 (25.51)	1.03 (7.10)	1.85 (12.76)	1.85 (12.76)
	40-60 (12.2-18.3)	0.30 (6.79)	2.88 (19.86)	5.21 (35.92)	1.44 (9.93)	2.60 (17.92)	2.60 (17.92)
	60-80 (18.3-24.4)	0.38 (8.60)	3.70 (25.51)	6.71 (46.27)	1.85 (12.76)	3.36 (23.17)	3.36 (23.17)
	80-100 (24.4-30.5)	0.47 (10.63)	4.52 (31.17)	8.22 (56.66)	2.26 (15.58)	4.11 (28.34)	4.11 (28.34)
10(254)	0-20 (0-6.1)	0.03 (0.68)	0.55 (3.79)	0.82 (5.56)	0.27 (1.86)	0.41 (2.83)	0.41 (2.83)
	20-40 (6.1-12.2)	0.07 (1.28)	1.51 (10.41)	1.92 (13.24)	0.41 (2.83)	0.76 (5.11)	0.76 (5.11)
	40-60 (12.2-18.3)	0.10 (2.26)	1.23 (8.48)	2.19 (15.10)	0.62 (4.27)	1.10 (7.58)	1.10 (7.58)
	60-80 (18.3-24.4)	0.12 (2.71)	1.15 (8.01)	2.54 (17.63)	0.75 (5.11)	1.37 (9.44)	1.37 (9.44)
	80-100 (24.4-30.5)	0.16 (3.62)	1.92 (13.24)	3.43 (23.65)	0.96 (6.62)	1.71 (11.79)	1.71 (11.79)
12(305)	0-20 (0-6.1)	0.013 (0.29)	0.27 (1.86)	0.41 (2.83)	0.14 (0.97)	0.21 (1.45)	0.21 (1.45)
	20-40 (6.1-12.2)	0.027 (0.51)	0.41 (2.83)	0.82 (5.56)	0.27 (1.86)	0.41 (2.83)	0.41 (2.83)
	40-60 (12.2-18.3)	0.041 (0.93)	0.55 (3.79)	1.10 (7.58)	0.27 (1.86)	0.55 (3.79)	0.55 (3.79)
	60-80 (18.3-24.4)	0.054 (1.22)	0.69 (4.76)	1.37 (9.44)	0.34 (2.34)	0.69 (4.76)	0.69 (4.76)
	80-100 (24.4-30.5)	0.069 (1.56)	0.86 (5.95)	1.51 (10.41)	0.48 (3.31)	0.75 (5.11)	0.75 (5.11)
14(356)	0-20 (0-6.1)	0.008 (0.18)	0.19 (1.31)	0.27 (1.86)	0.14 (0.97)	0.21 (1.45)	0.21 (1.45)
	20-40 (6.1-12.2)	0.016 (0.36)	0.38 (2.62)	0.55 (3.79)	0.27 (1.86)	0.41 (2.83)	0.41 (2.83)
	40-60 (12.2-18.3)	0.021 (0.47)	0.51 (3.54)	0.76 (5.11)	0.34 (2.34)	0.55 (3.79)	0.55 (3.79)
	60-80 (18.3-24.4)	0.027 (0.60)	0.69 (4.76)	0.96 (6.62)	0.41 (2.83)	0.69 (4.76)	0.69 (4.76)
	80-100 (24.4-30.5)	0.034 (0.76)	0.86 (5.95)	1.10 (7.58)	0.48 (3.31)	0.86 (5.95)	0.86 (5.95)

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

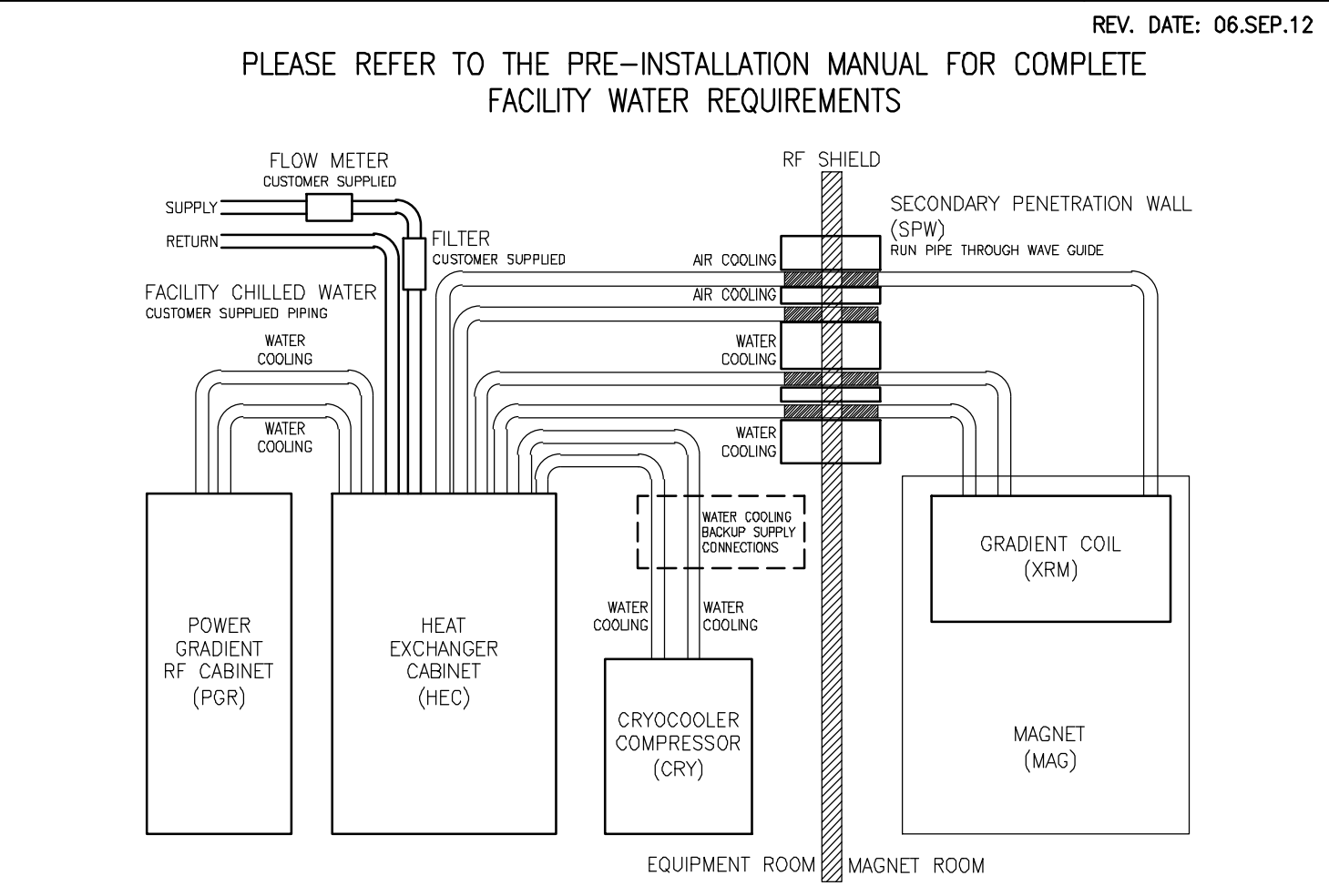
NOTE 2: THE TABLE DATA IS BASED ON THE FOLLOWING:
A. INITIAL FLOW CONDITIONS AT MAGNET INTERFACE.
B. GAS TEMPERATURE STARTING AT 4.5 KELVIN (-452 F OR -268 C).
C. HELIUM GAS FLOW RATE OF 2.737 CUBIC FEET (77.5 CUBIC METERS) PER MINUTE.
D. 45° STANDARD SWEEP ELBOW K = 15 F.
E. 90° STANDARD SWEEP ELBOW K = 20 F.
F. 45° LONG SWEEP ELBOW K = 7.5 F.
G. 90° LONG SWEEP ELBOW K = 15 F.

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 INTERFACE 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.

SYSTEM CHILLER PIPING

MECH-41



FACILITY WATER REQUIREMENTS

MECH-47

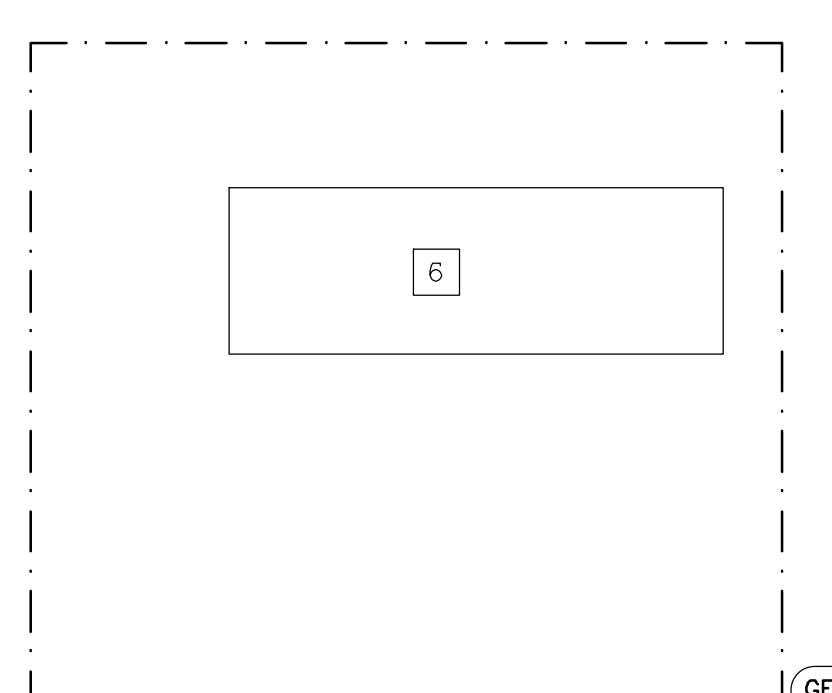
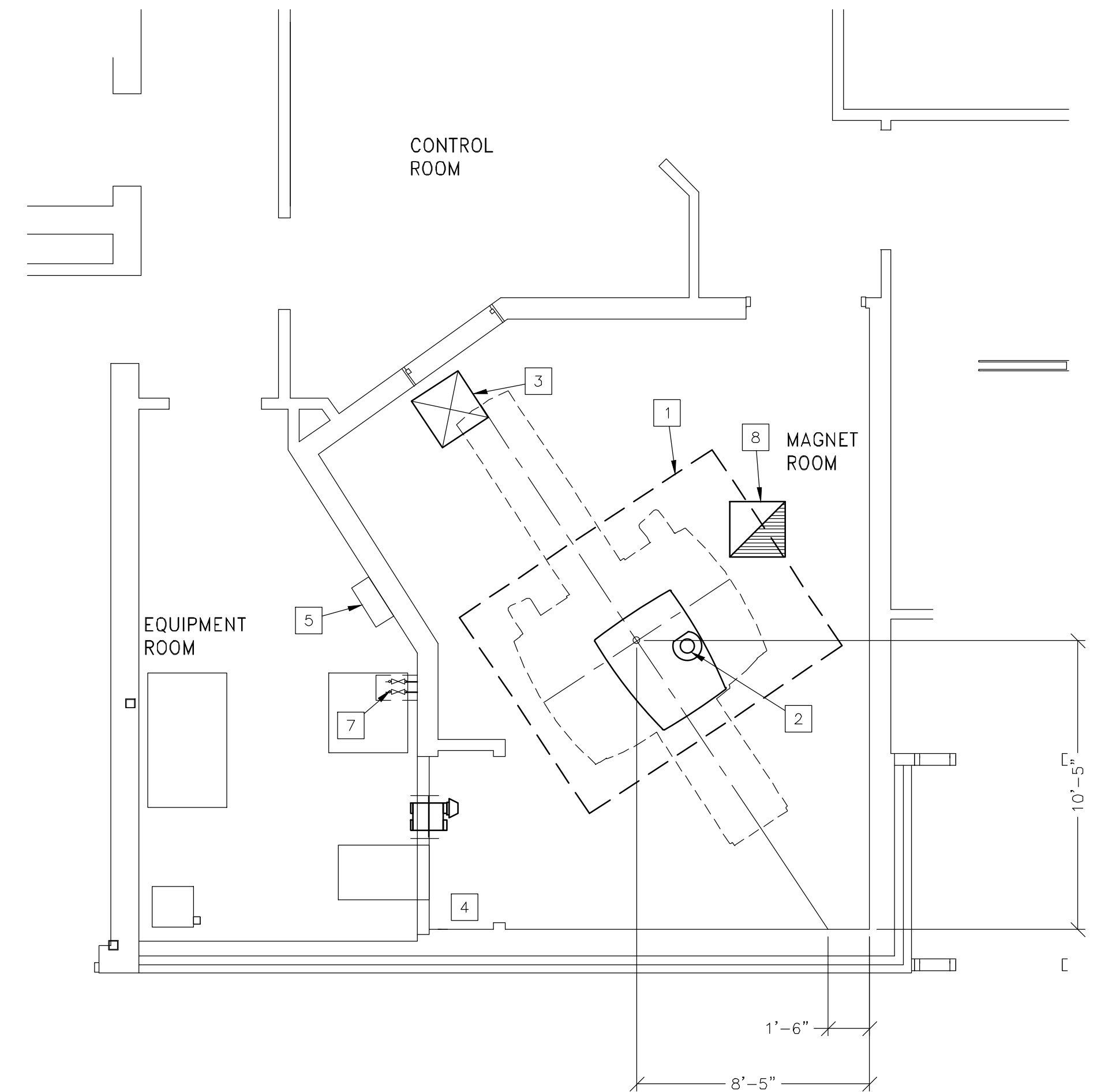
REV. DATE: 06.JUN.12

PARAMETER	REQUIREMENTS
AVAILABILITY	CONTINUOUS
ANTIFREEZE	0-40% PROPYLENE GLYCOL
MINIMUM FLOW	30 GPM (114 L/MIN)
MAXIMUM FLOW	35 GPM (132 L/MIN)
MAXIMUM PRESSURE DROP IN HEC AT MINIMUM FLOW	34.8 PSI (2.4 BAR) WITH 40% PROPYLENE GLYCOL-WATER; 1021 KG/M ³ DENSITY
MAXIMUM PRESSURE DROP IN HEC AT MAXIMUM FLOW	47.8 PSI (3.3 BAR) WITH 40% PROPYLENE GLYCOL-WATER; 1021 KG/M ³ DENSITY
TEMPERATURE RISE AT MINIMUM FLOW	12.2°F (6.8°C) WITH 40% PROPYLENE GLYCOL-WATER; 3730 J/(KG K) SPECIFIC HEAT; 1021 KG/M ³ DENSITY; 49 KW HEAT
TEMPERATURE RISE AT MAXIMUM FLOW	10.4°F (5.8°C) WITH 40% PROPYLENE GLYCOL-WATER; 3730 J/(KG K) SPECIFIC HEAT; 1021 KG/M ³ DENSITY; 49 KW HEAT
MAXIMUM INLET PRESSURE TO HEC	87 PSI (6 BAR)
CHILLER SIZE	MINIMUM 49 KW
CONDENSATION PROTECTION	FACILITY PLUMBING TO THE HEC MUST BE PROPERLY ROUTED AND INSULATED TO PREVENT EQUIPMENT DAMAGE OR SAFETY HAZARDS
MINIMUM CONTINUOUS HEAT LOAD	7.5 KW
INLET TEMPERATURE	44.6 TO 50°F (7 TO 10°C) MEASURED AT THE INLET TO THE HEC
CUSTOMER SUPPLIED FEEDER HOSE (FROM MAIN WATER SUPPLY TO HEC)	1.5 INCH (38.1 MM) MINIMUM HOSE INSIDE DIAMETER
HOSE CONNECTIONS TO THE HEC	1.5 INCH (38.1 MM) MALE NPT

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

MECHANICAL/PLUMBING LAYOUT

RECOMMENDED CEILING HEIGHT = 8'-9"



GE Project Manager: JIM DOWBROSKI
Telephone: 603-934-3739

THE GE HR TECHNICAL SUPPORT GROUP IS AN ADDITIONAL RESOURCE THAT CAN PROVIDE ANSWERS FOR GENERAL GE PRODUCT SIZING QUESTIONS AND CAN BE REACHED AT (877)-305-9677

MECHANICAL/PLUMBING ITEMS

CUSTOMER/CONTRACTOR SUPPLIED AND INSTALLED ITEMS

ITEM NO.	ITEM DESCRIPTION (* INDICATES EXISTING)
1	MINIMUM CEILING HEIGHT REQUIREMENT AREA. REFER TO MAGNET EQUIPMENT DETAILS FOR MORE INFORMATION
2	SEE SHEET S-2 FOR CRYOGEN VENT LOCATION. THE TOTAL PRESSURE DROP OF THE ENTIRE CRYOGENIC VENT SYSTEM MUST BE LESS THAN 20 PSI (138 KPa). THE CALCULATION STARTS AT THE MAGNET VENT INTERFACE AND ENDS AT THE TERMINATION POINT OUTSIDE THE BUILDING. 8" (203 mm) CRYOGEN VENT - TOLERANCE FOR VENT LOCATION ±7/16" (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 GEDDESIC DOWNS) THE CUSTOMER'S CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE CRYOGENIC VENT SYSTEM AND VENT SUPPORTS WITHIN THE MAGNET ROOM.
3	MINIMUM 2 FT. X 2 FT. (0.61m X 0.61m) PRESSURE EQUALIZING WAVEGUIDE VENT IN THE MAGNET ROOM CEILING.
4	CLOSET MUST ALLOW FREE AIR EXCHANGE OF 400 CFM (680 M ³ /HR) BETWEEN MAGNET ROOM AND CLOSET
5	REFER TO EQUIPMENT DETAIL B05-71 FOR MORE INFORMATION
6	(2) 2" I.D. HIGH PRESSURE HOSES AND (2) 2" TO 1 1/2" REDUCERS
7	TWO (2) 1 1/2 IN. (38MM) COPPER LINES (INSULATED) TWO (2) SHUT OFF VALVES. REFER TO DETAIL MECH-41
8	PLEASE REFER TO THE PRE-INSTALLATION MANUAL FOR COMPLETE FACILITY WATER REQUIREMENTS. EXHAUST FAN AND AIR INLET MUST BE SIZED FOR A MINIMUM OF 1800 CFM (34 M ³ /MINUTE) AND A MINIMUM OF 12 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.

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-IS 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.

GE Healthcare
Healthcare Project Implementation - Design Center
Minneapolis, Wisconsin

SHEET TITLE: MECHANICAL LAYOUT
MODALITY TYPE: OPTIMA MR450W

THIS PLAN IS SUBMITTED TO GUESTS LOCATION OF GE HEALTHCARE EQUIPMENT AND ASSOCIATED ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS IN PREPARING THIS PLAN, EVERY EFFORT HAS BEEN MADE TO CONFORM TO ALL APPLICABLE REGULATIONS AND STANDARDS. THE USER OF THIS PLAN SHALL BE RESPONSIBLE FOR ANY DAMAGES RESULTING THEREFROM.

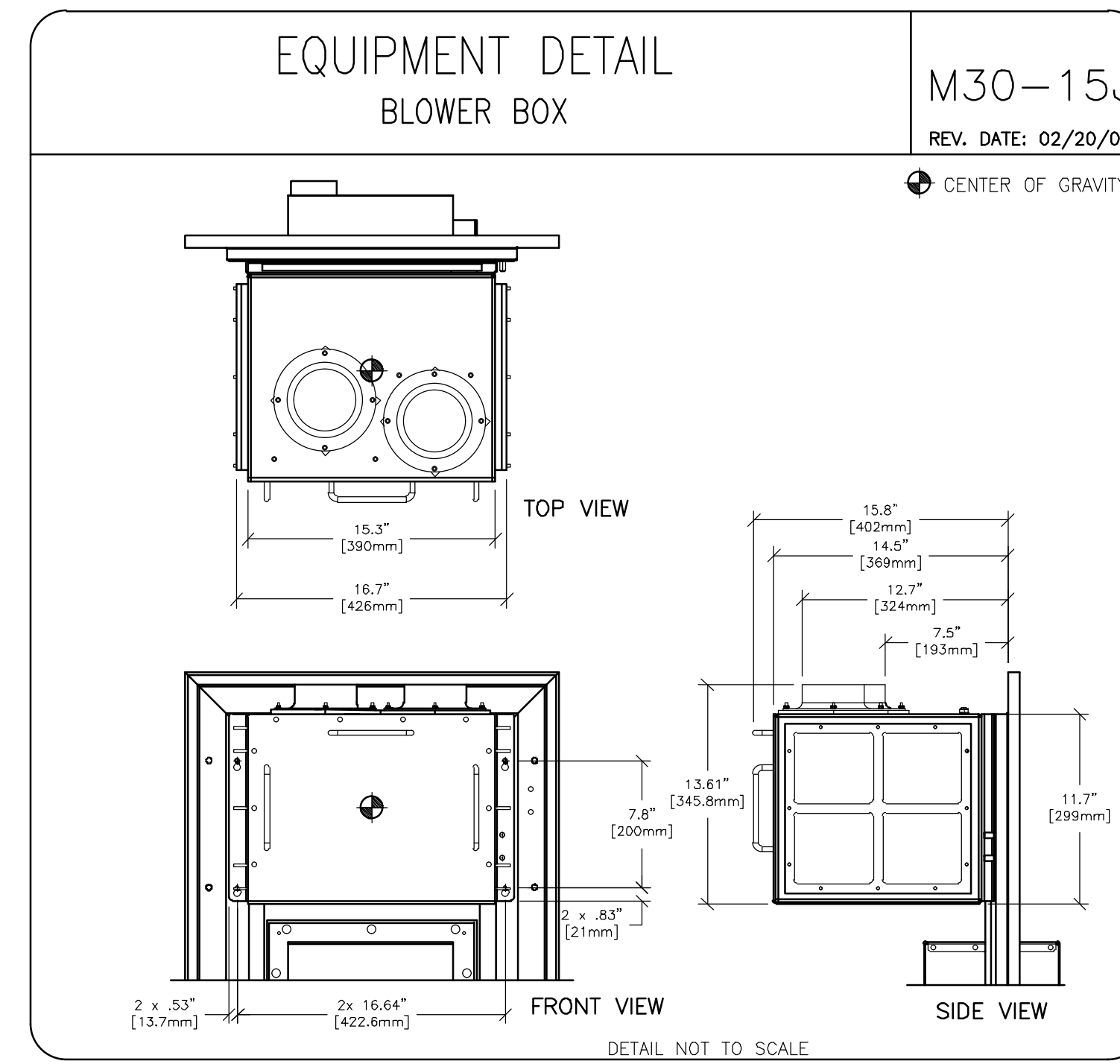
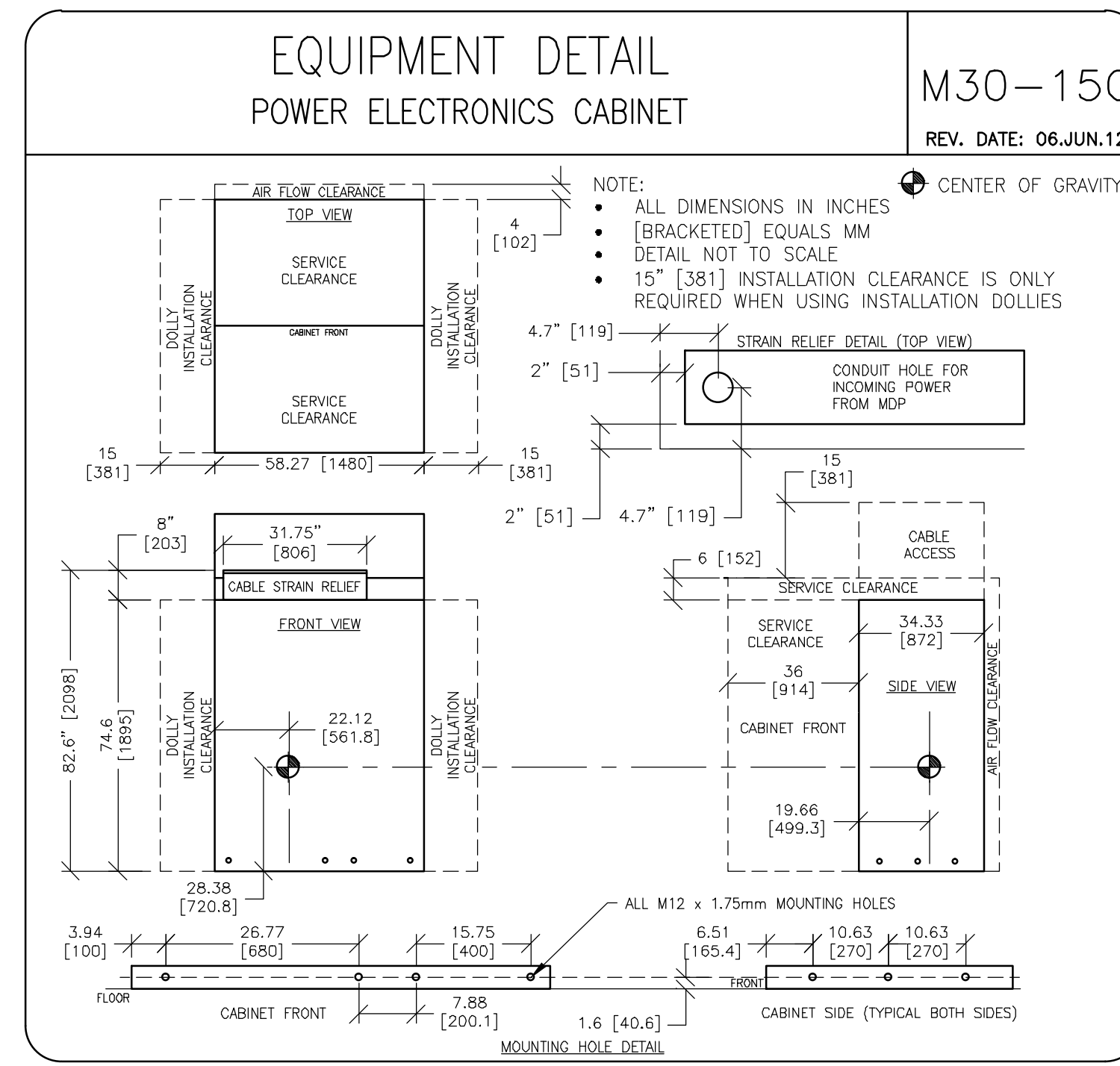
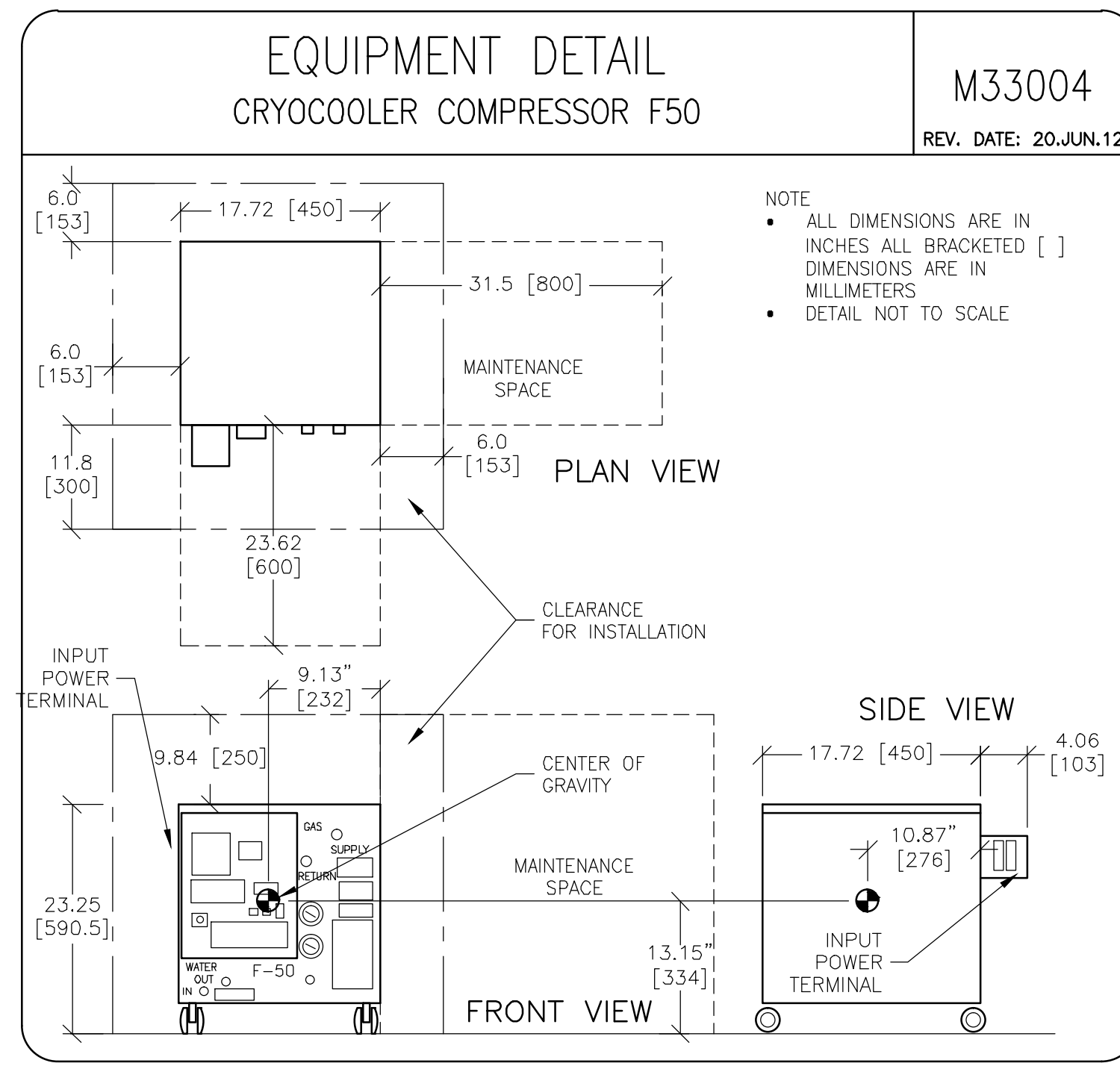
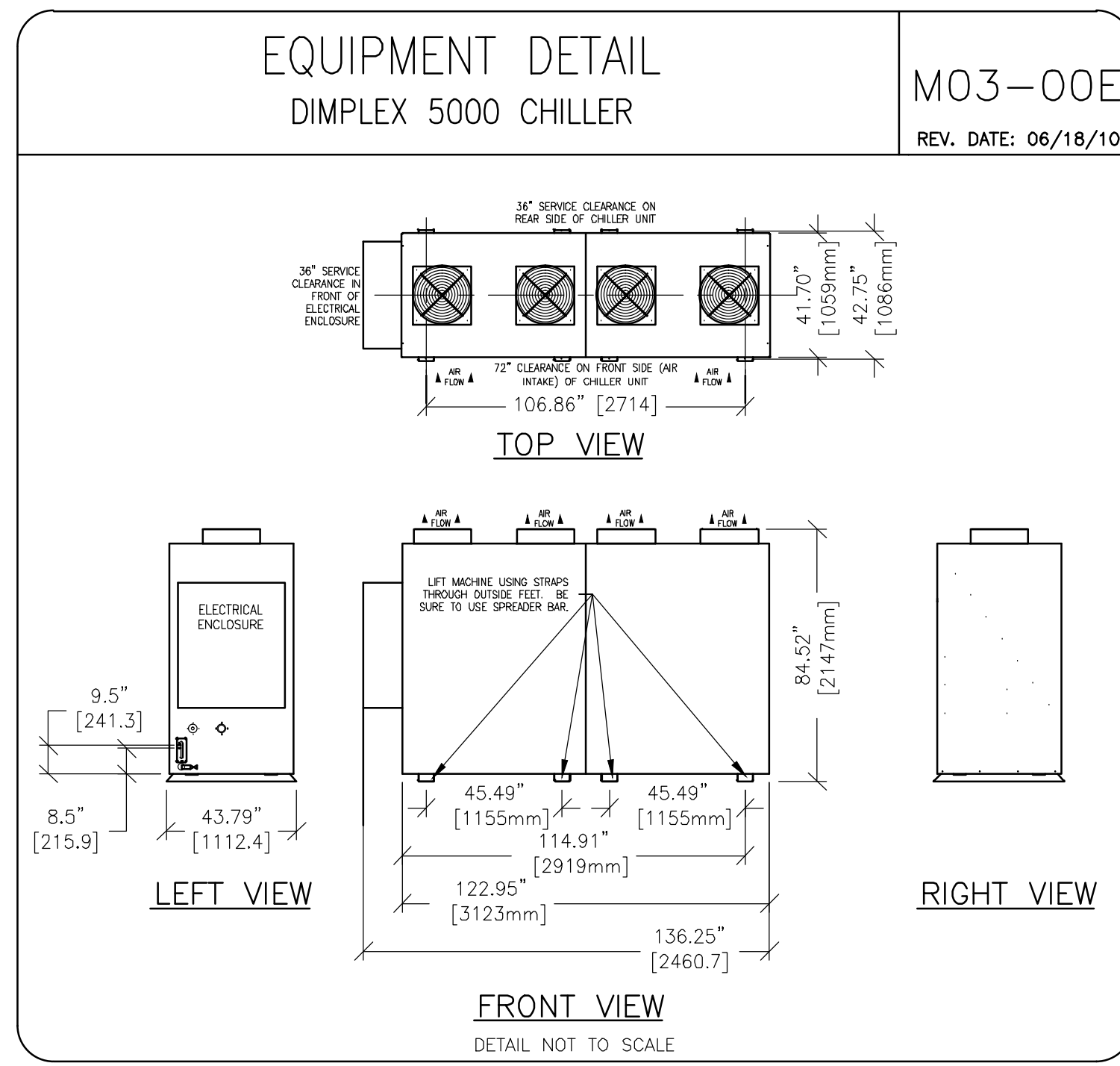
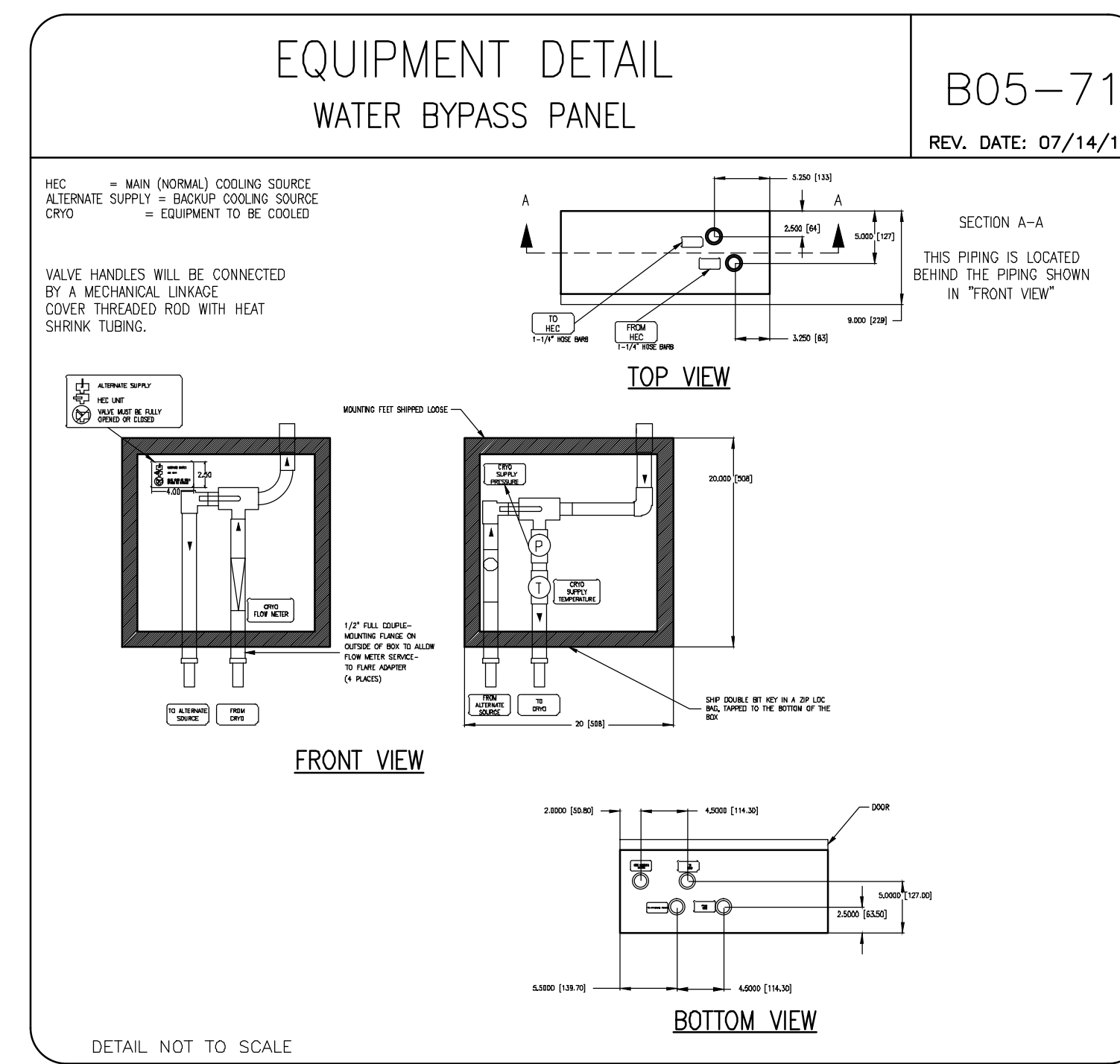
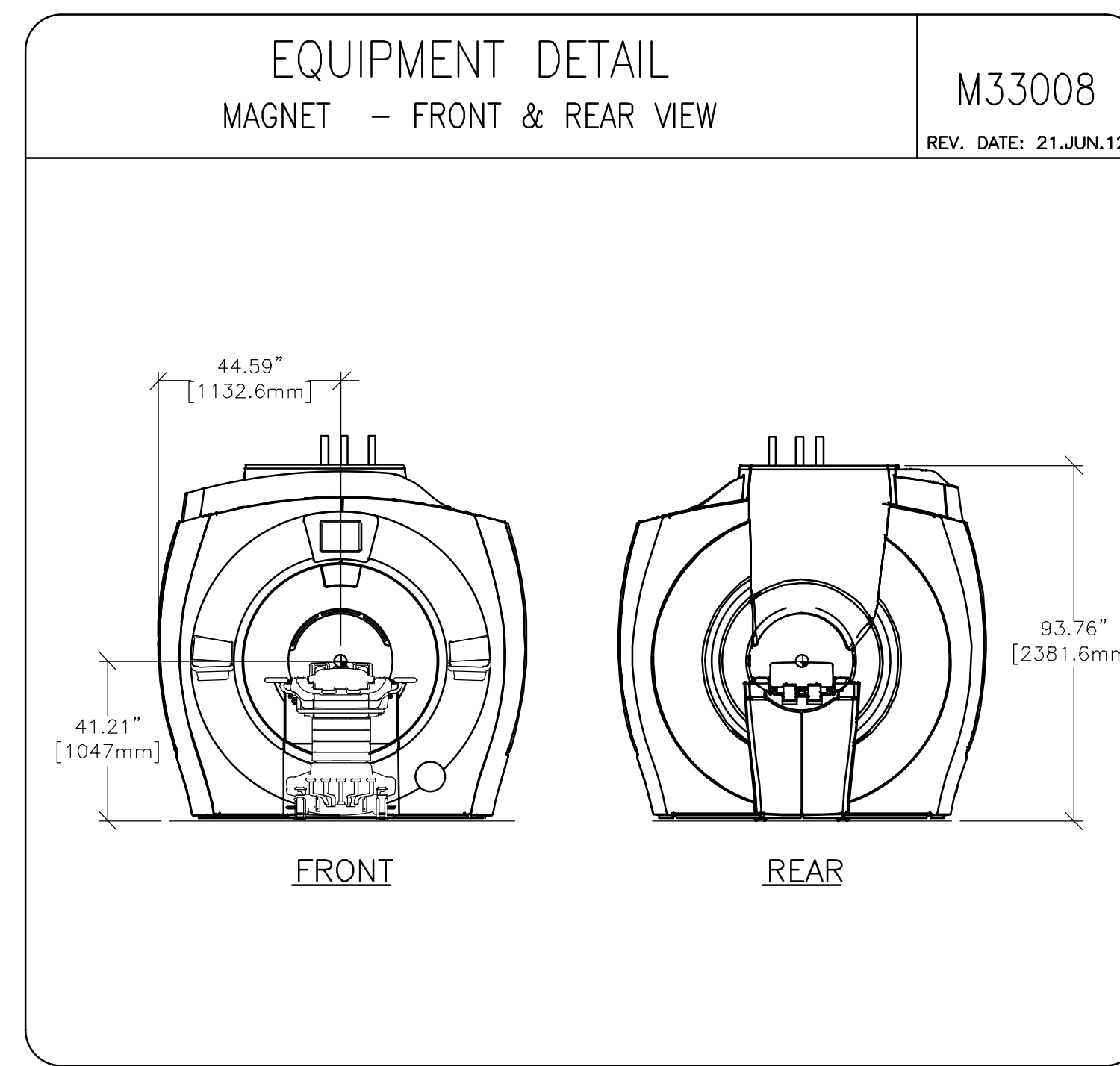
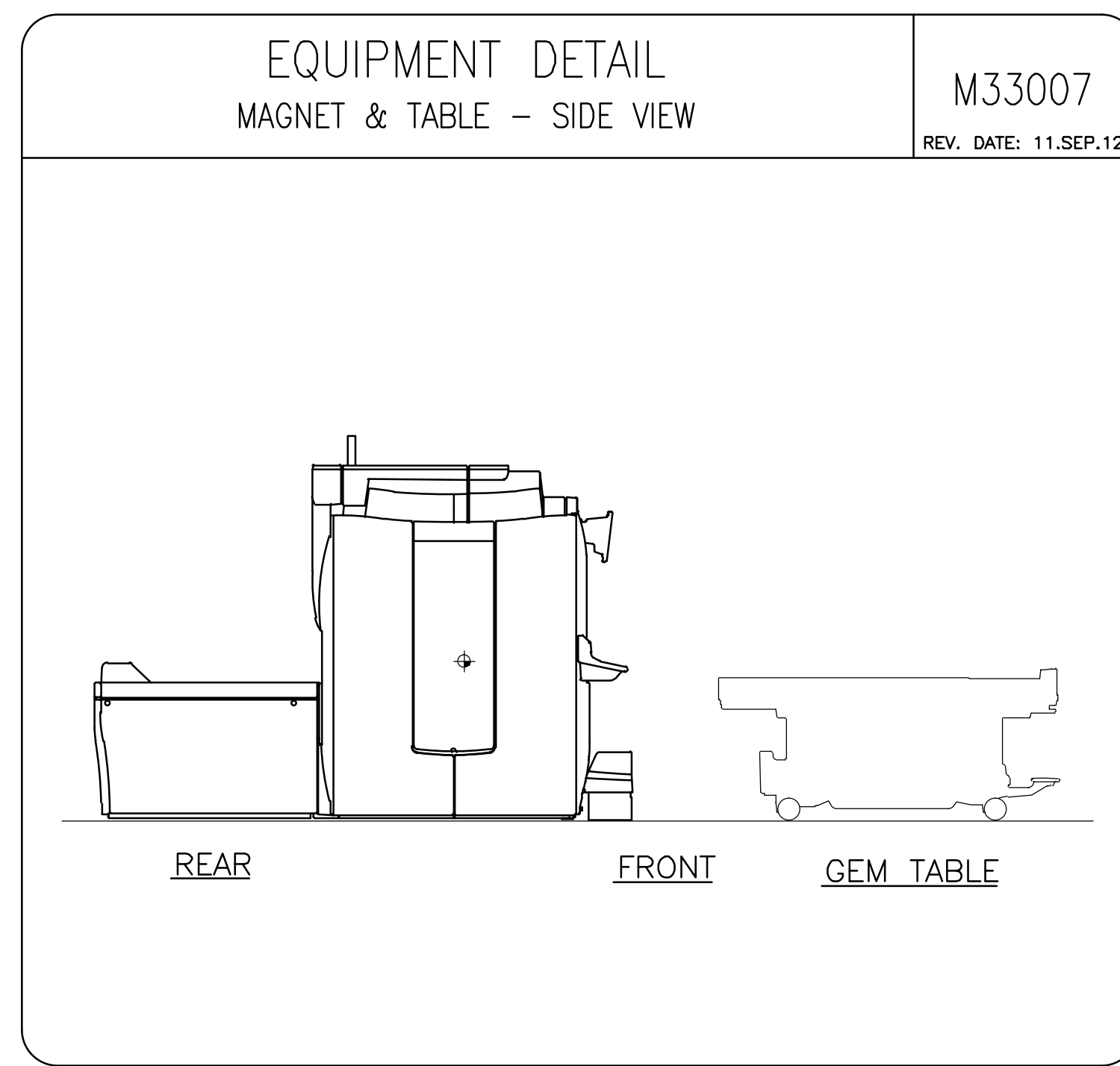
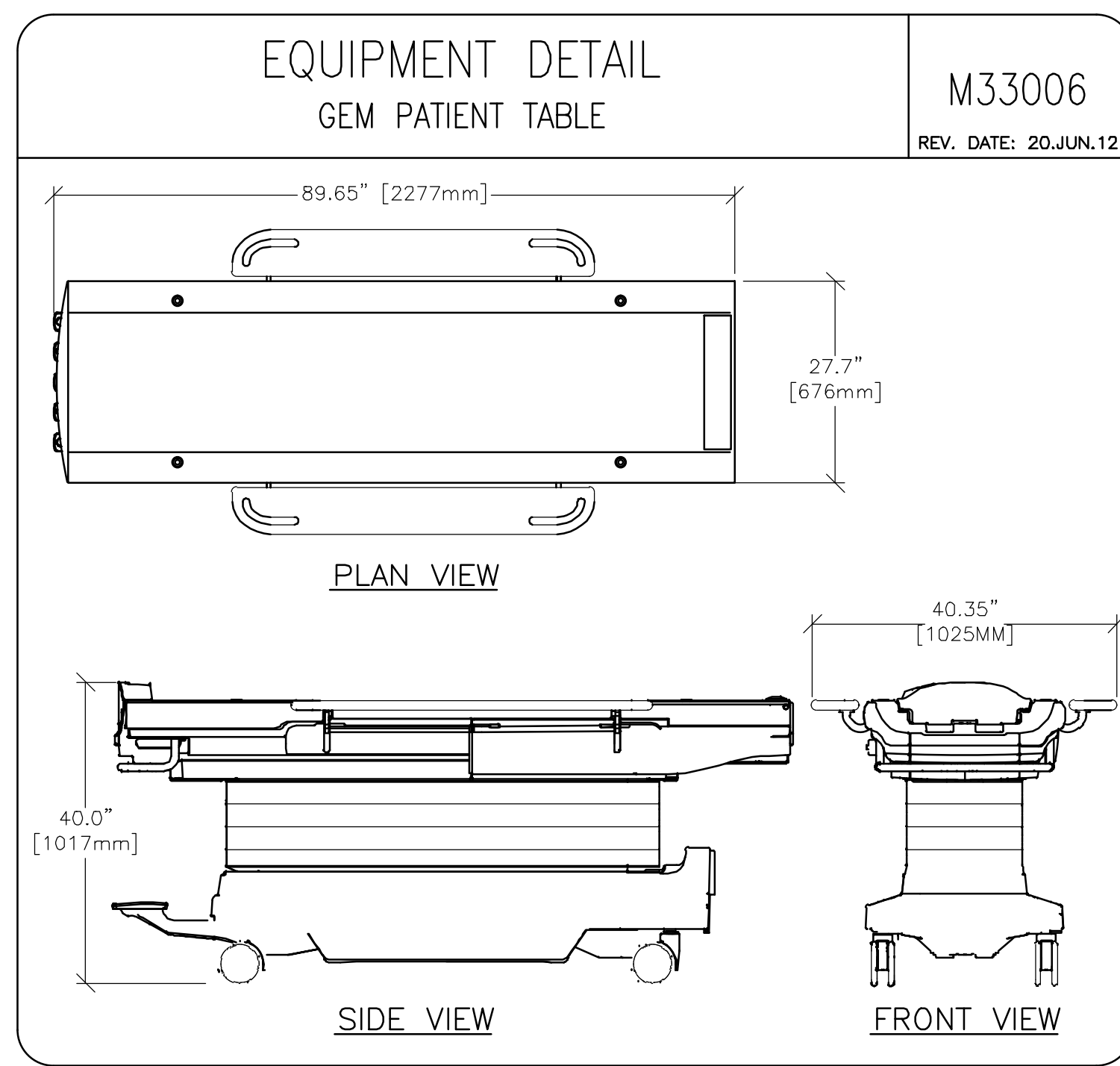
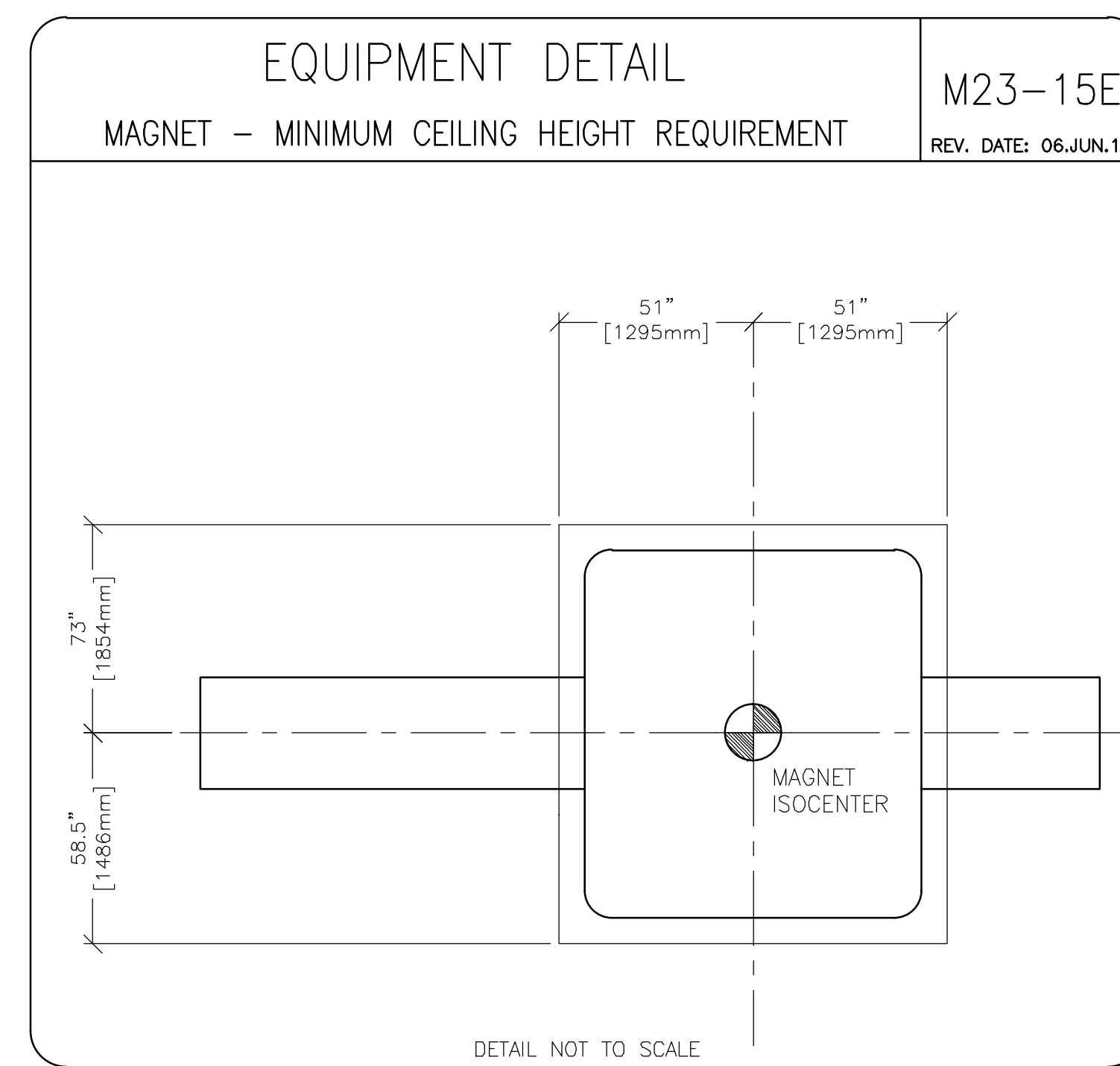
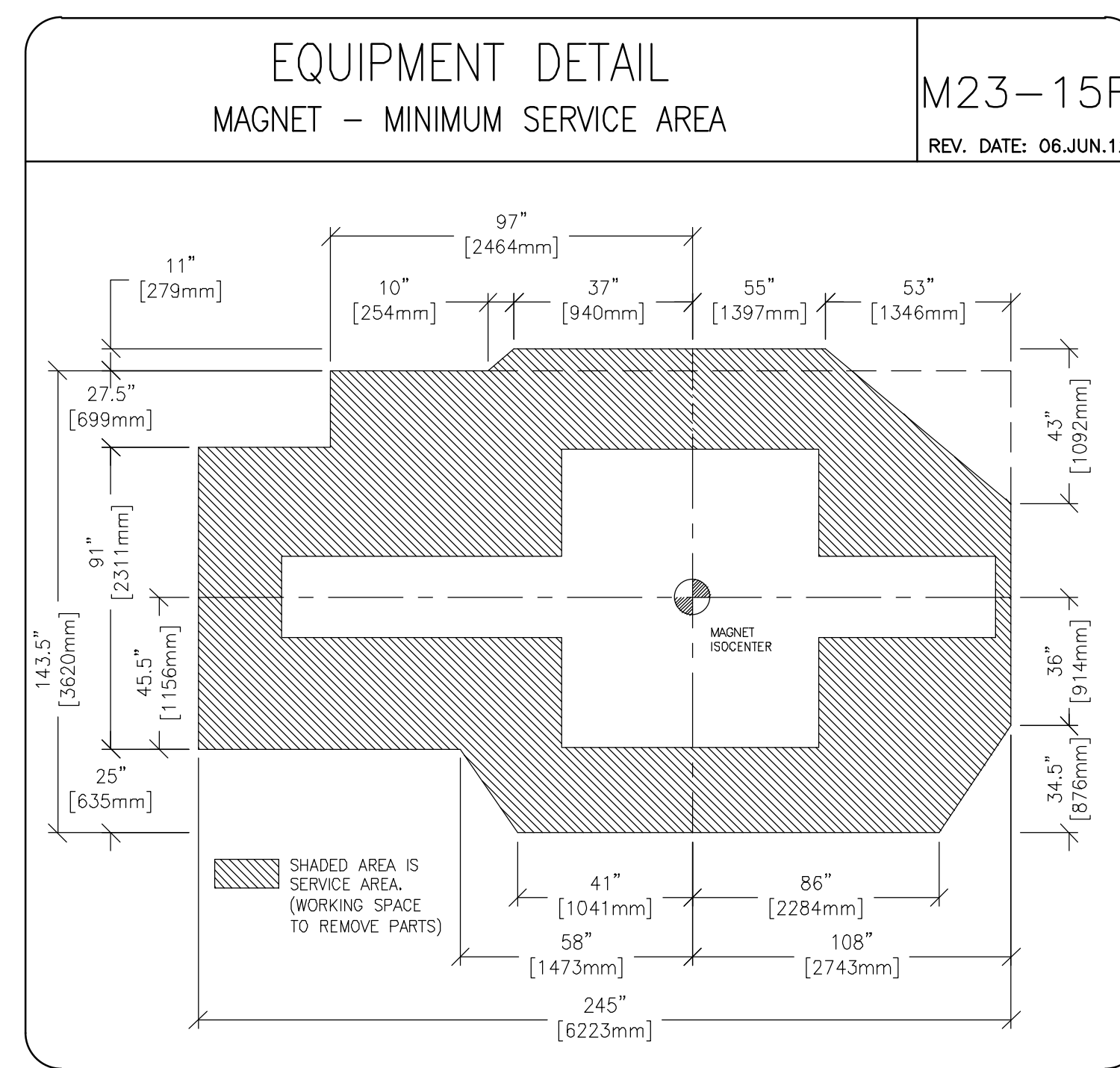
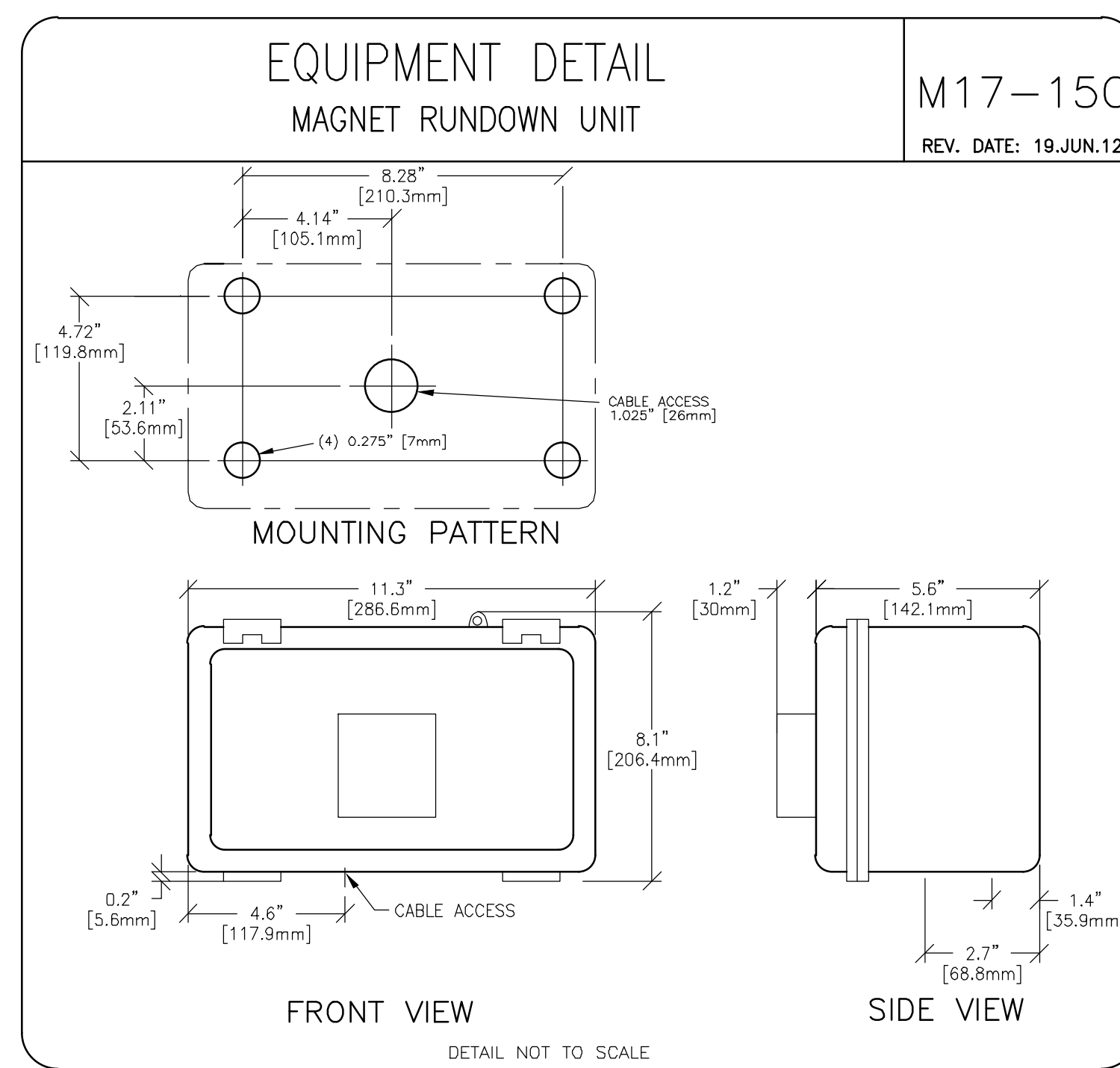
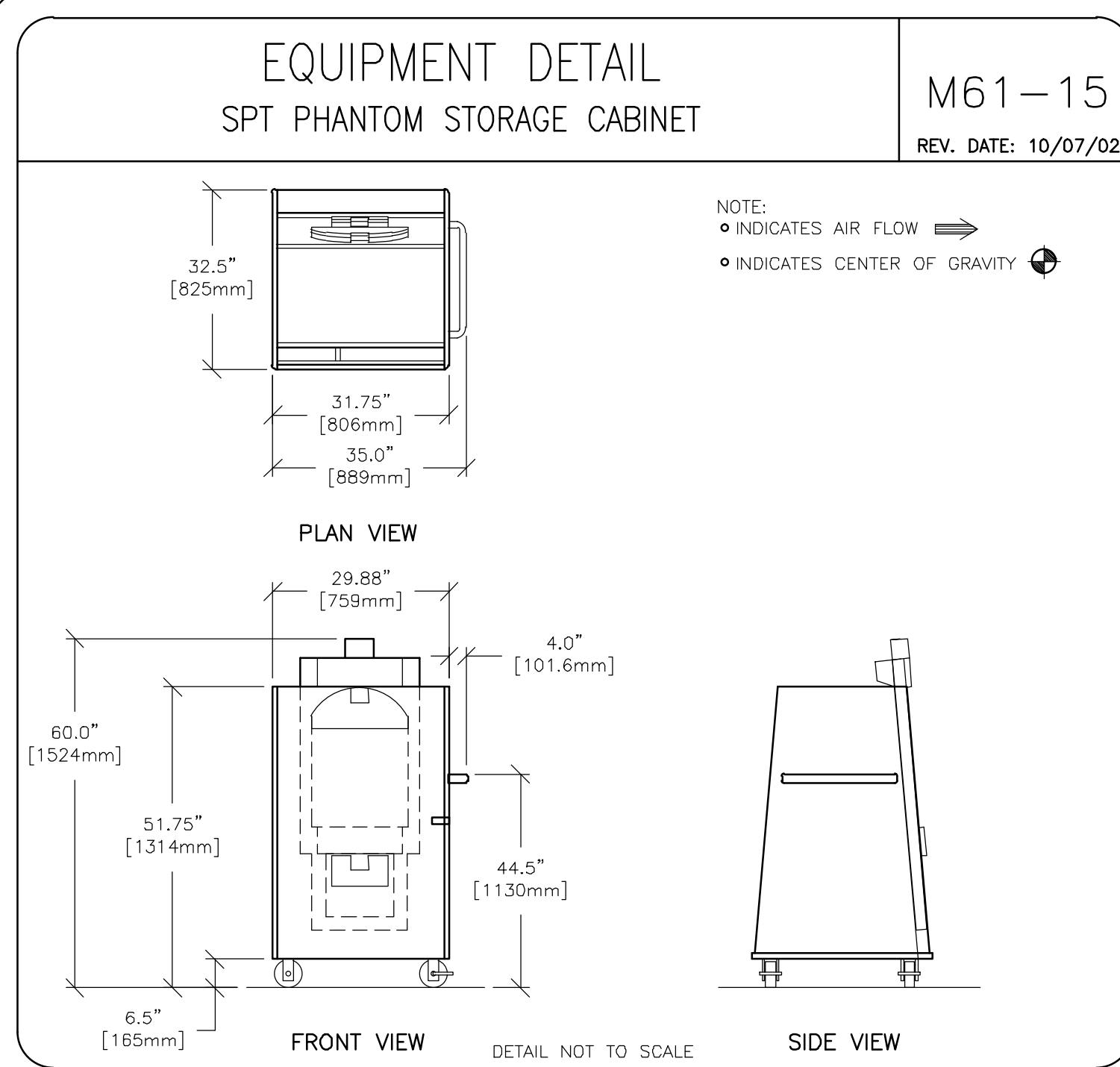
PROJECT TITLE:
ORTHOPAEDIC ASSOCIATES OF PORTLAND
PORTLAND, MAINE

PROJECT NO: 130261
REVISION: 00

DATE: 22.Jan.13
DRAWN BY: TMS
CHECKED BY: PMM
CON NO: 4057873
CON DT: 16.Jan.13

REVISION HISTORY:

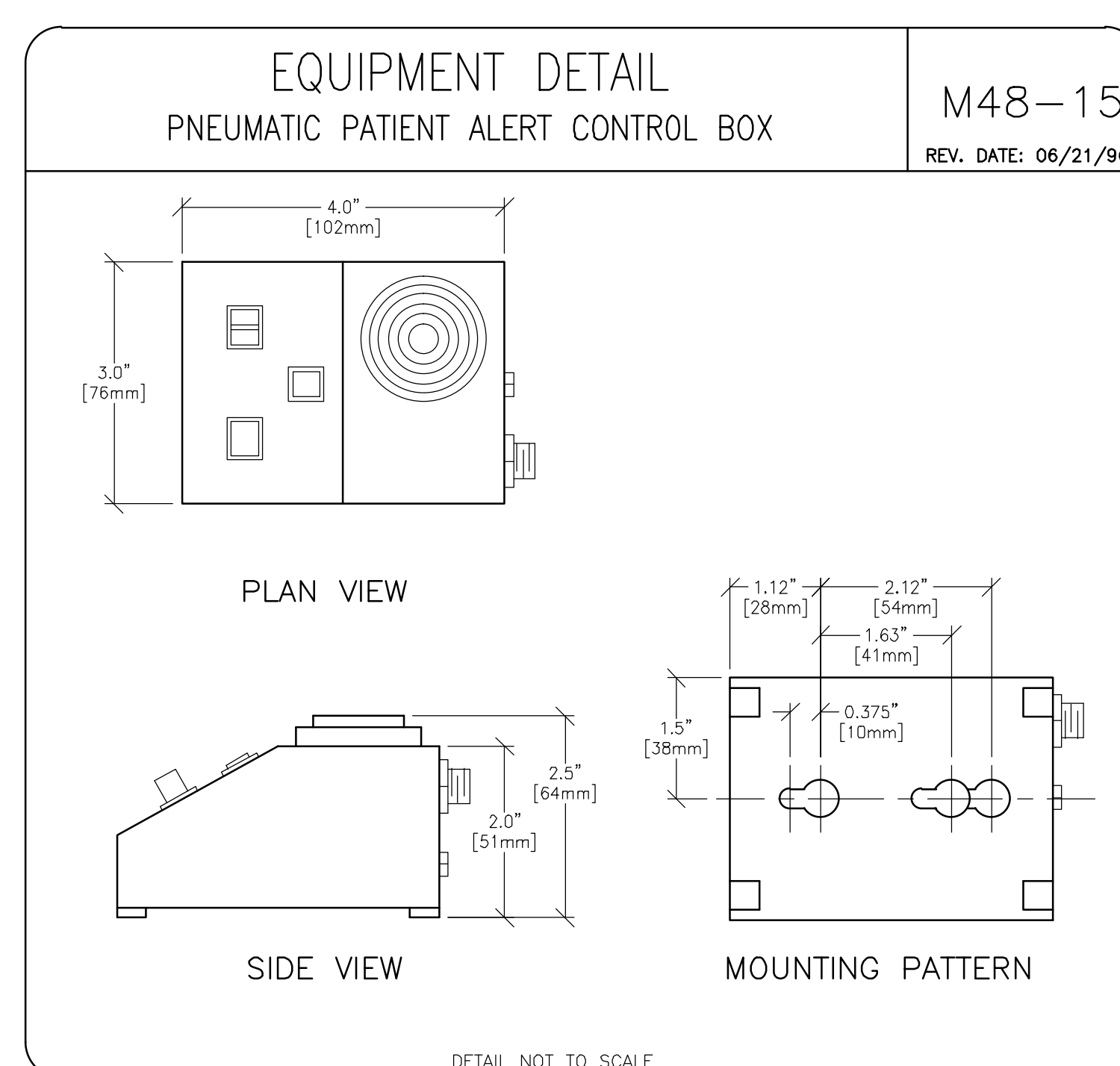
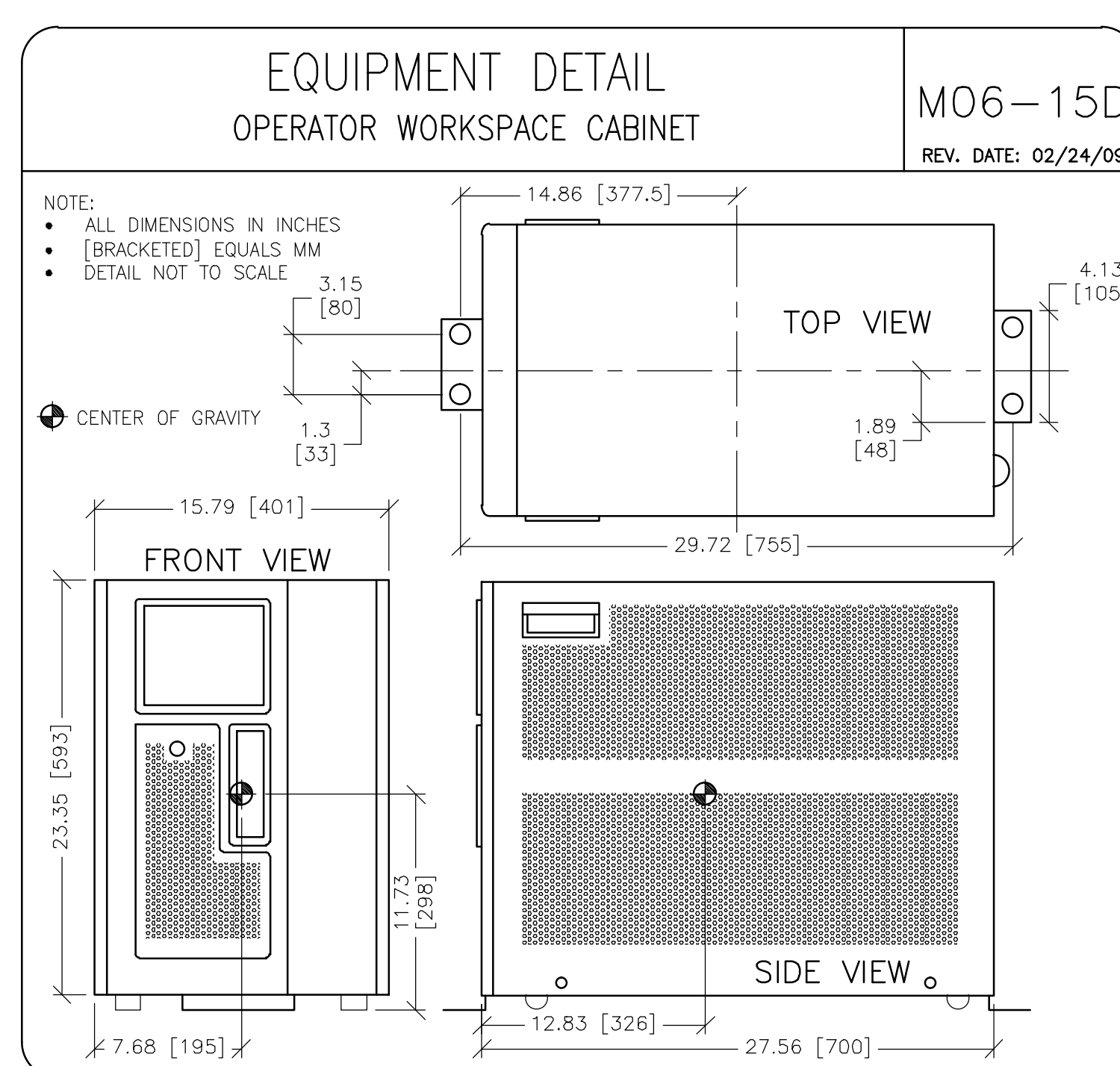
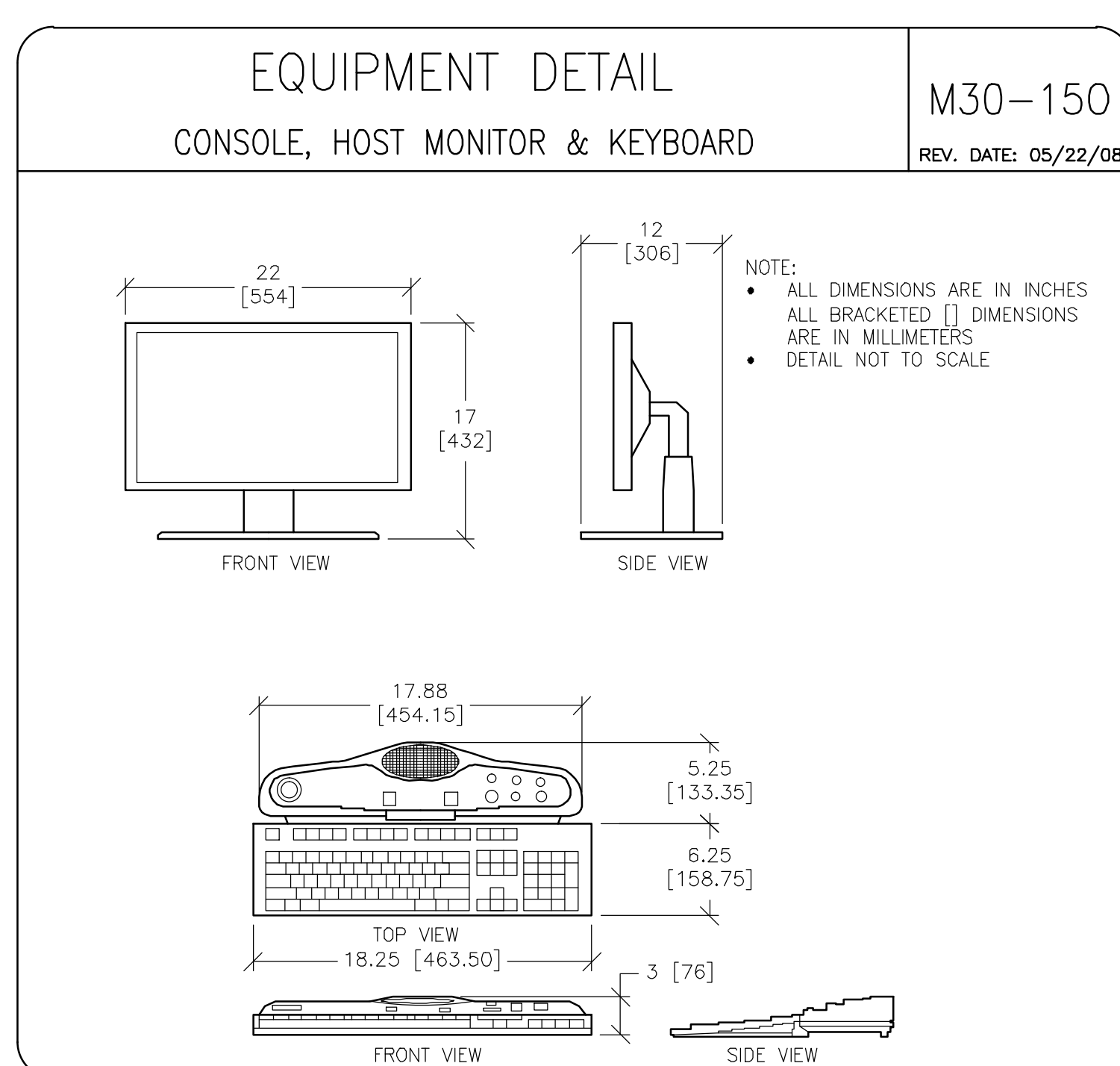
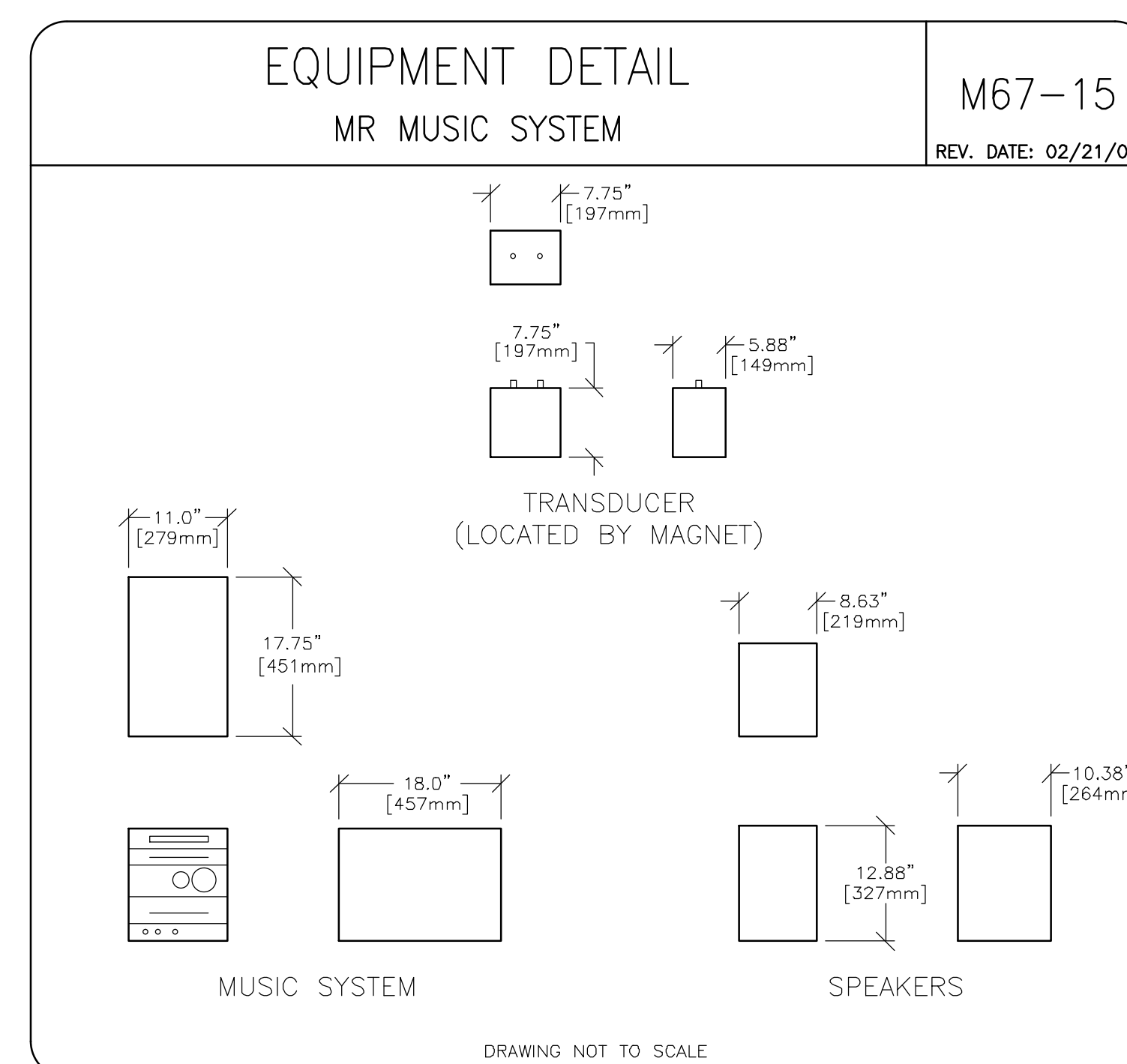
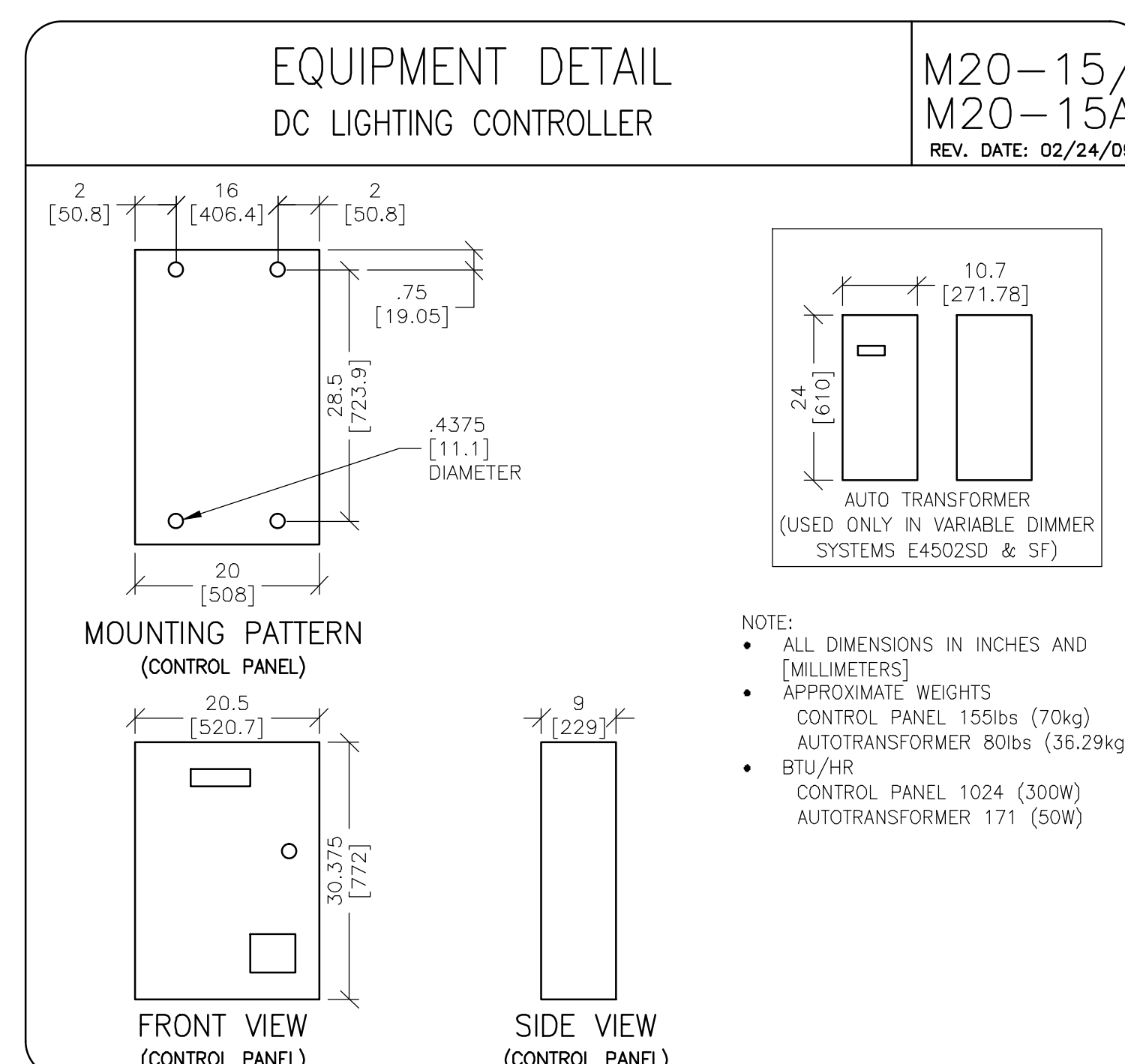
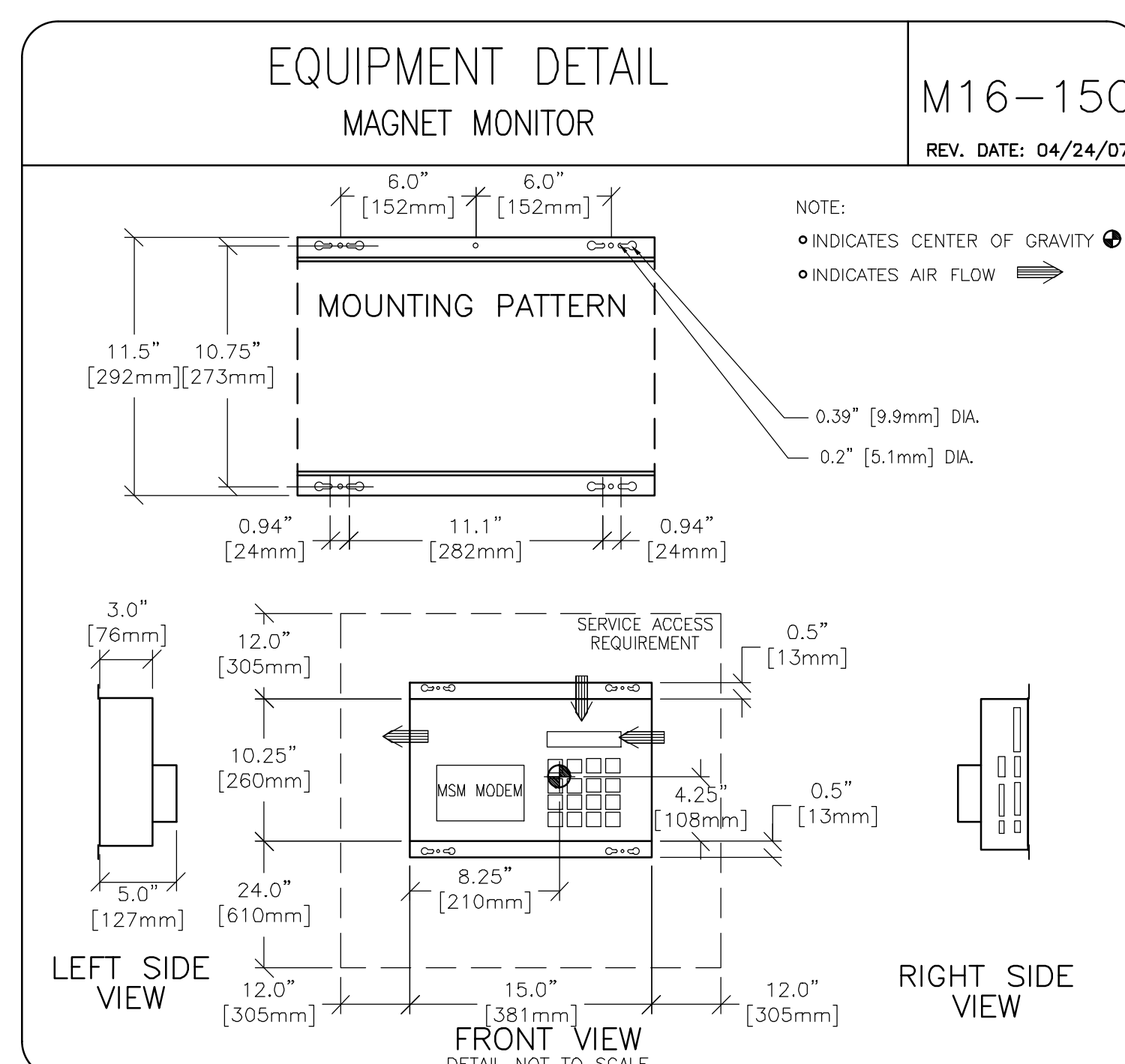
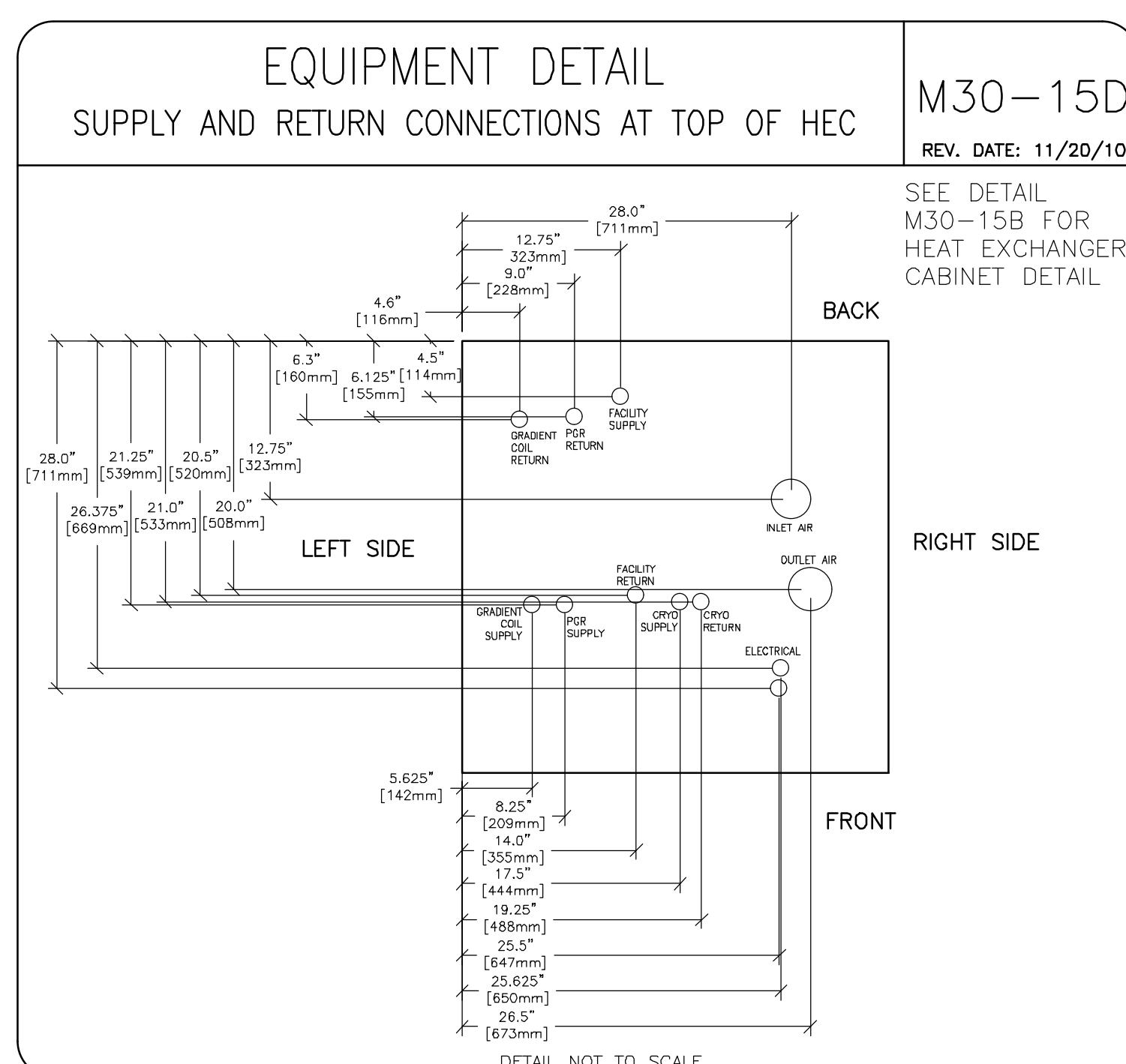
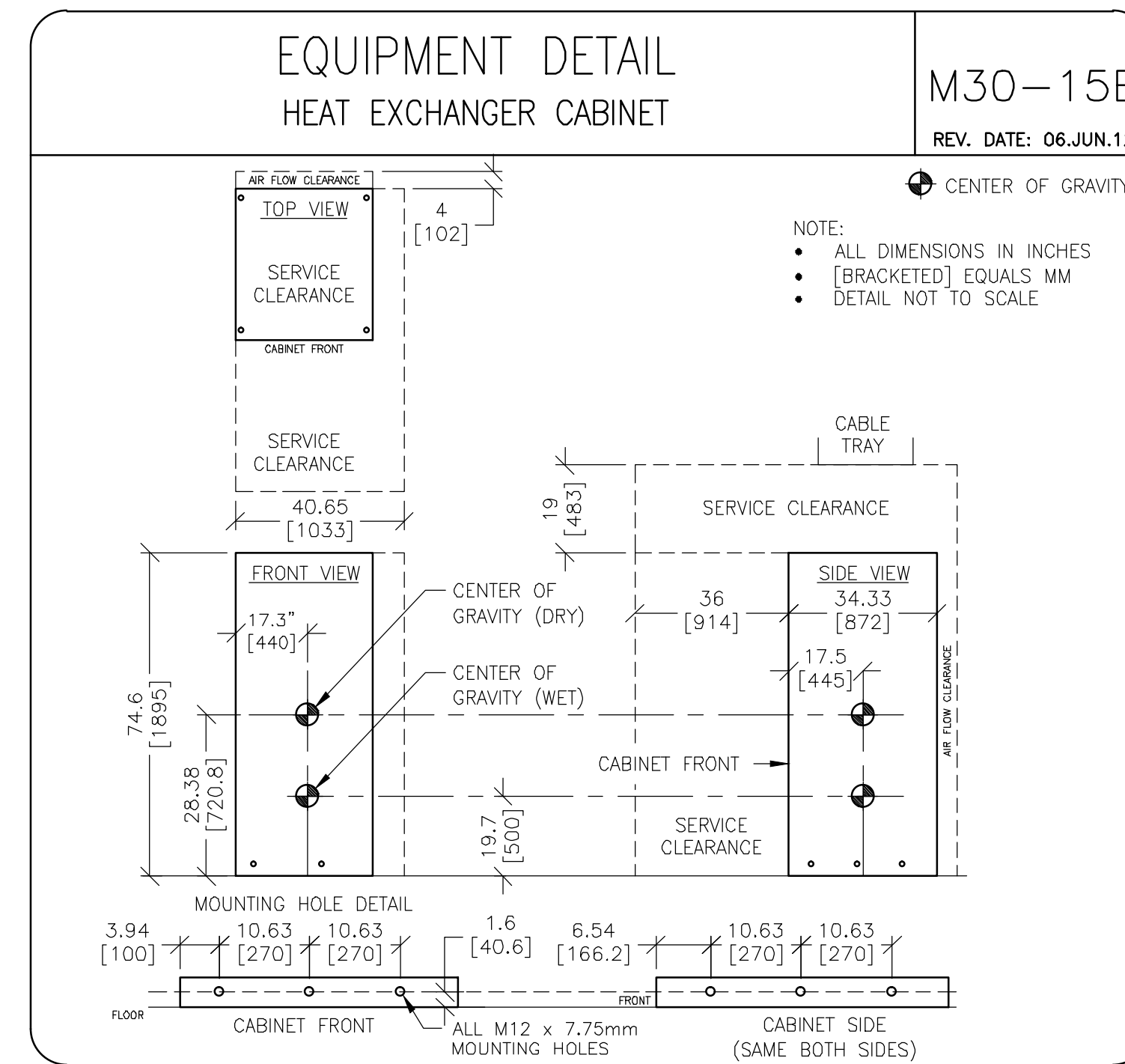
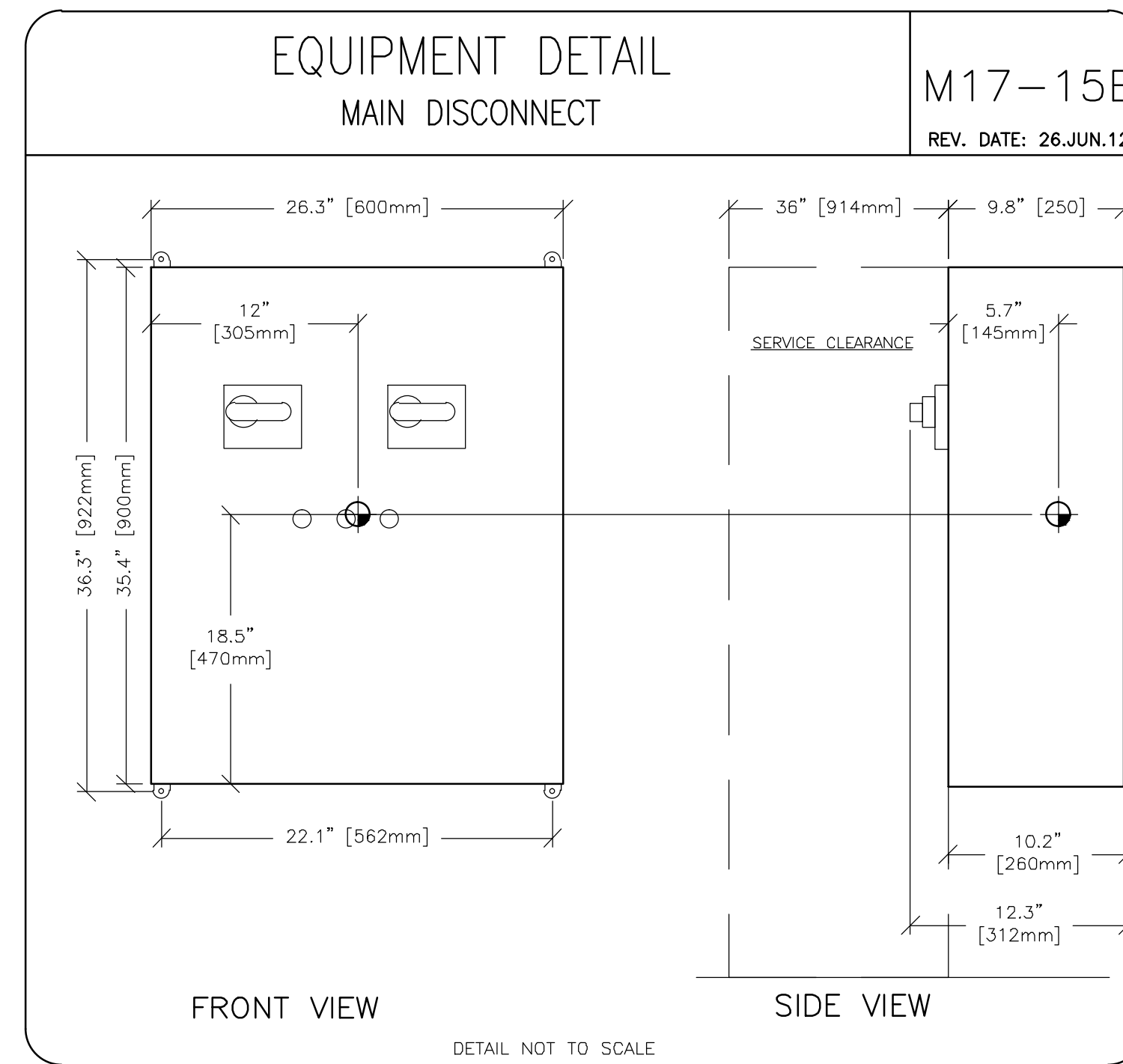
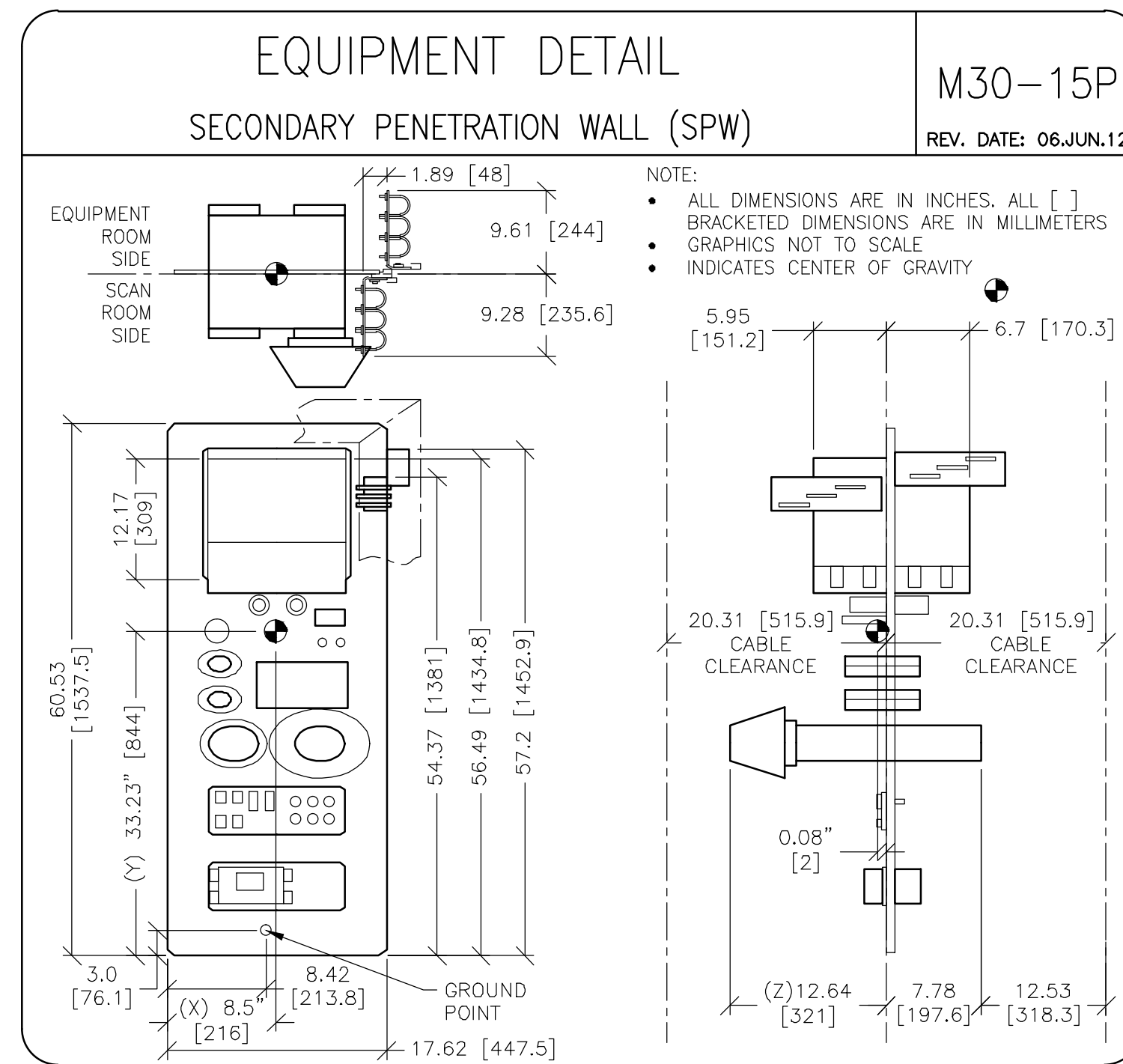
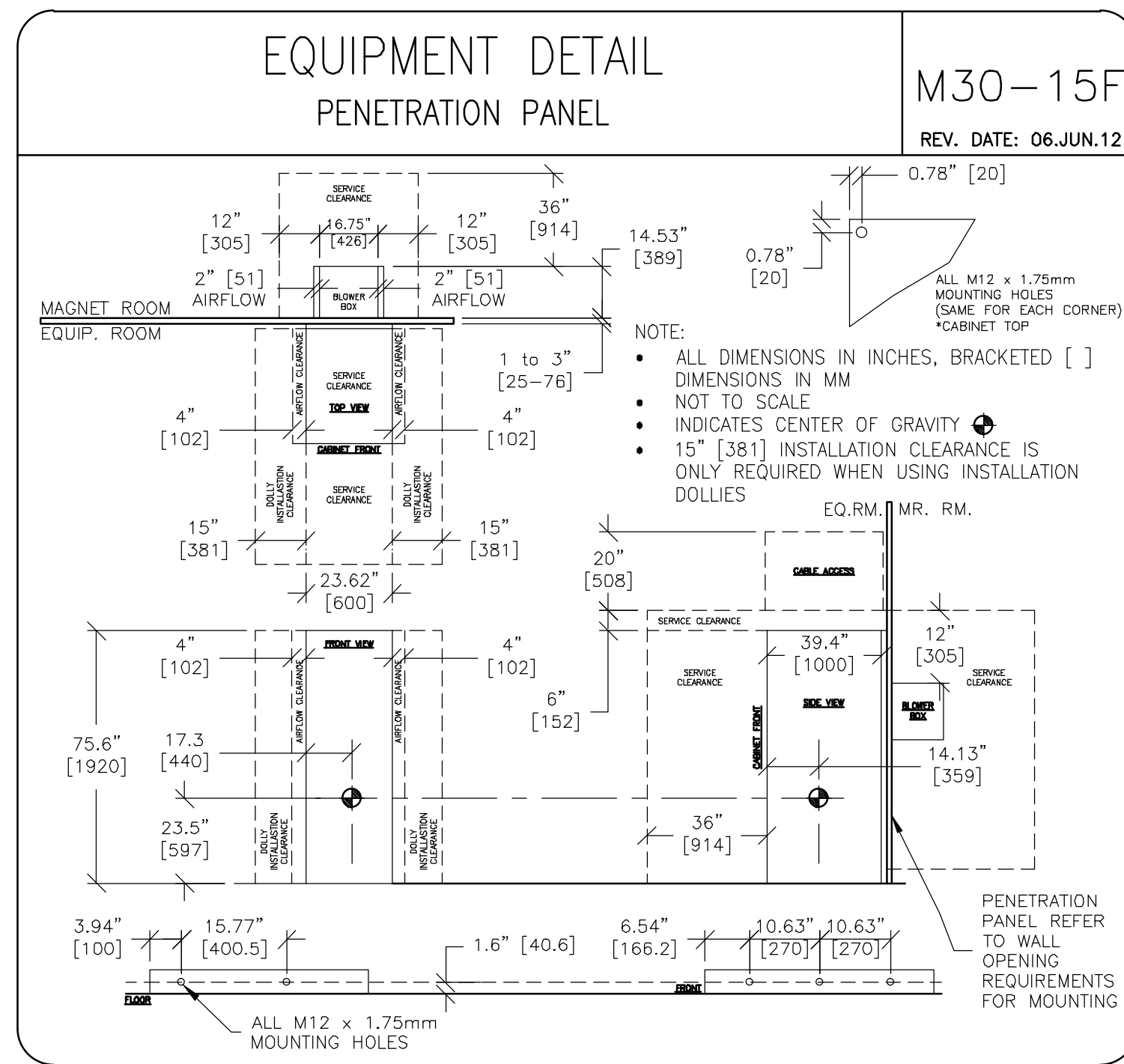
SHEET
M1



PROJECT	REVISION
130261	00
DATE:	22.Jan.13
DRAWN BY:	TMS
CHECKED BY:	PMM
CON NO.:	4057873
CON DT.:	16.Jan.13

REVISION HISTORY:

This drawing is based on Sketch No. 1.3nef006
 PIM R6
 RQ - 132725



PROJECT	REVISION
130261	00

DATE: 22.Jan.13
 DRAWN BY: TMS
 CHECKED BY: PMM
 CON NO: 4057873
 CON DT: 16.Jan.13

REVISION HISTORY:

This drawing is based on Sketch No. 1.3nef006
 PIM R6
 RQ - 132725