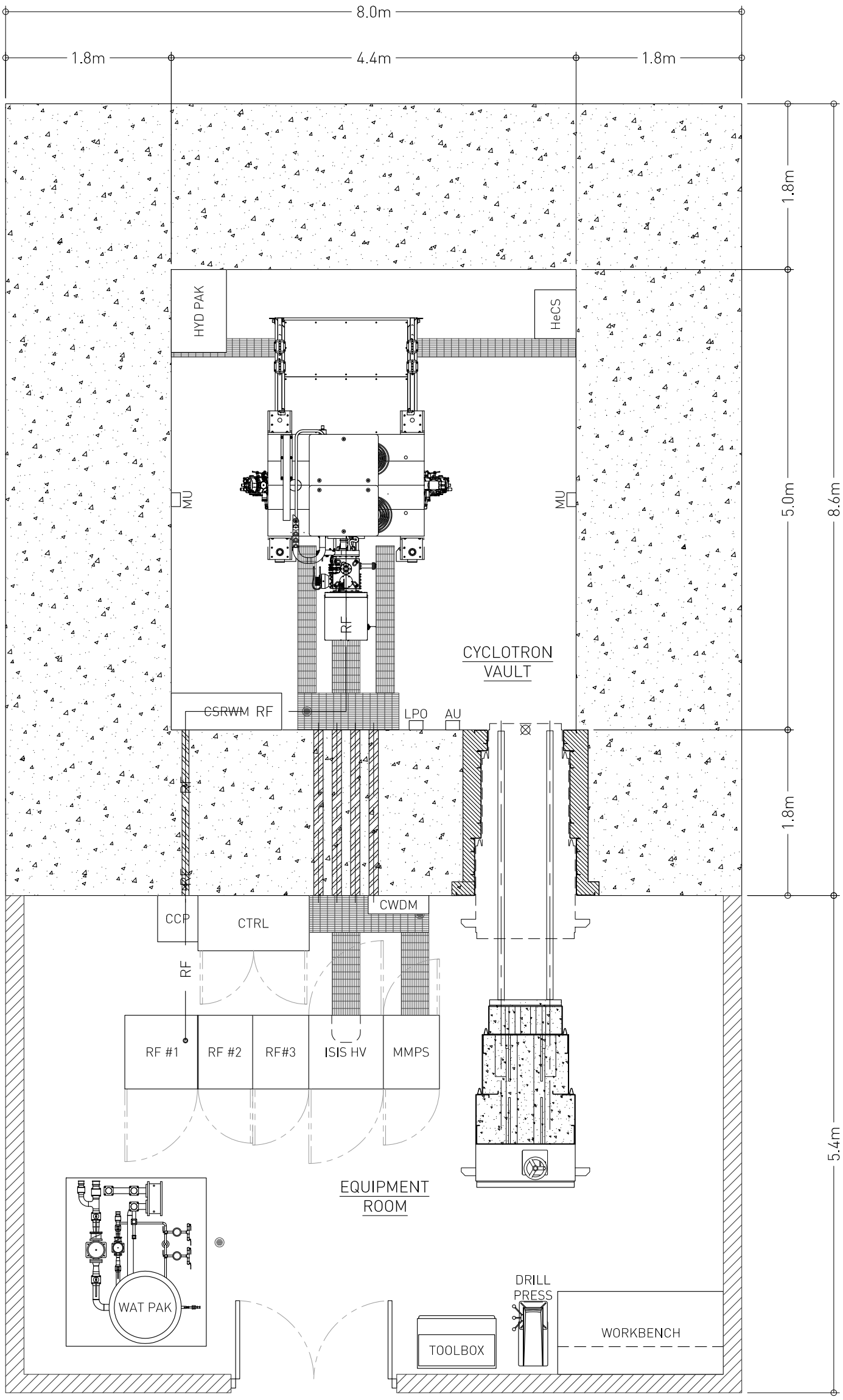
7 nr.



UNSHIELDED TR-19 CYCLOTRON

GENERIC NORTH AMERICA
[city], [province], [state]

7

TR-19 LAYOUT PACKAGE
PROJECT No: [job no.]

7 nr

PRELIMINARY ISSUE
[yyyy-mm-dd]

ACSI
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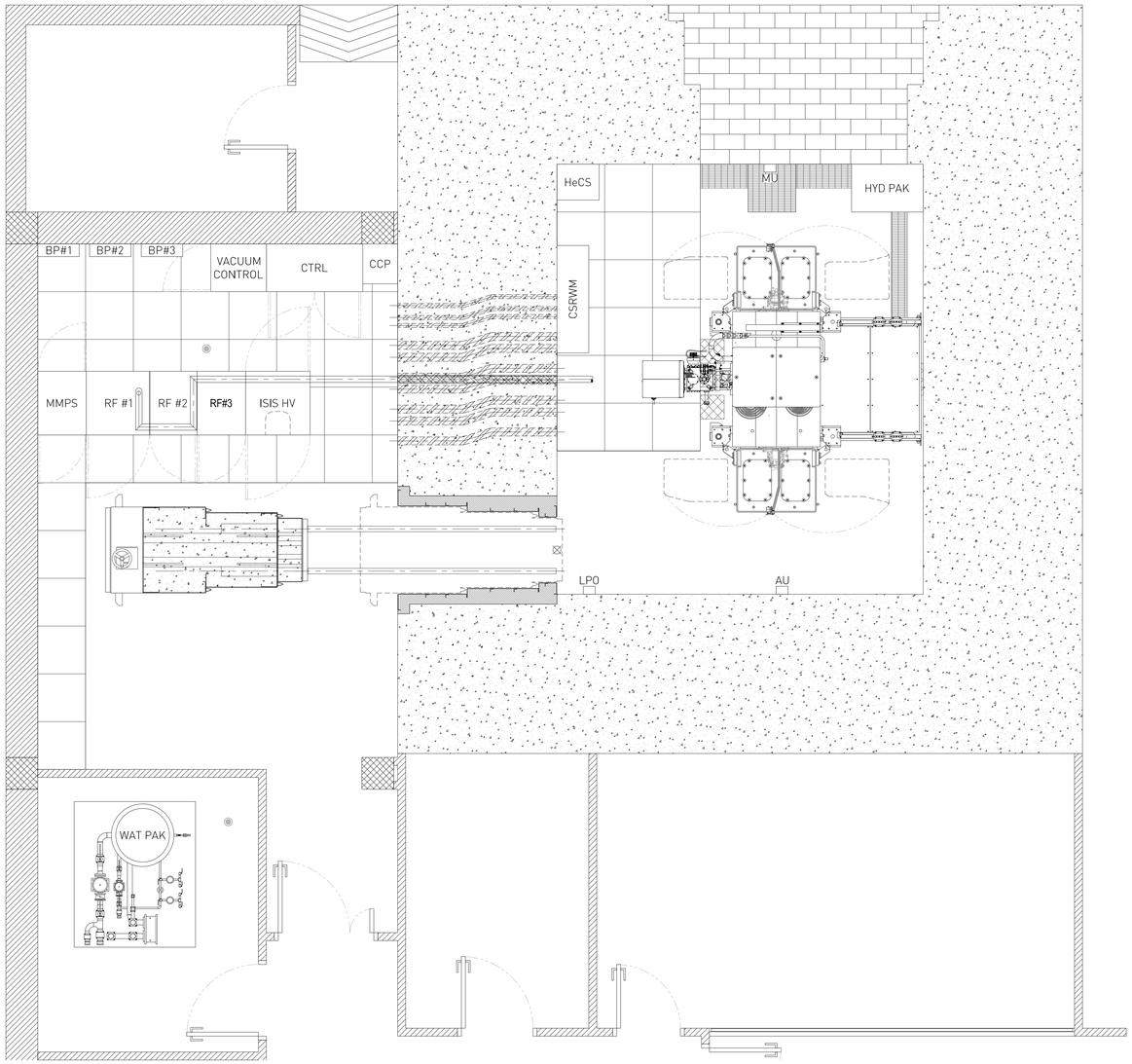
SHEET SCHEDULE

THESE SHEETS ARE A DOCUMENT SET AND SHOULD NOT BE SEPARATED

KEY PLAN / SCOPE OF WORK

SCALE: NTS



CUSTOMER

THESE DRAWINGS ARE PROVIDED TO ASSIST THE CUSTOMER IN PREPARING THE SITE FOR INSTALLATION OF EQUIPMENT ACQUIRED FROM ACSI AND ARE NOT TO BE USED AS CONSTRUCTION DOCUMENTS. ACSI RESERVES THE RIGHT TO MAKE CHANGES IN THE DRAWINGS OR SPECIFICATIONS SHOWN AT ANYTIME WITHOUT NOTICE OR OBLIGATION, AND HEREBY DISCLAIMS RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

ALL REQUIREMENTS FOR THIS EQUIPMENT ARE NOT NOTED ON THIS SHEET. IT IS SUGGESTED THAT THESE DRAWINGS BE REVIEWED BY QUALIFIED PROFESSIONALS WHO CAN ASSIST WITH MAKING DECISIONS REGARDING RADIATION CONTAINMENT, MAGNETIC FIELD CONTAINMENT, ELECTRICAL, STRUCTURAL AND MECHANICAL REQUIREMENTS. ALTHOUGH THE EQUIPMENT MAY BE INSTALLED IN AN EXISTING ROOM OF SIMILAR FUNCTION, REQUIREMENTS STILL NEED TO BE CHECKED.

ACSI SITE REQUIREMENTS

1. REVIEW EQUIPMENT ORDER FOR EXACT ITEMS PURCHASED. OPTIONAL ITEMS NOT ON ORDER MAY BE INDICATED ON THESE PLANS.
2. ALL ROOM DIMENSIONS ARE CRITICAL; IMMEDIATELY CONTACT ACSI IF CHANGES OCCUR OR IF DIMENSIONS ARE NOT CORRECT.
3. PROVIDE A LOCKABLE EQUIPMENT HOLDING AREA CLOSE TO THE INSTALLATION FOR STORING TOOLS AND TEST EQUIPMENT.
4. MAKE SURE A DUST FREE, TEMPERATURE AND HUMIDITY CONTROLLED ENVIRONMENT IS AVAILABLE FOR STORING THE EQUIPMENT IF THE SITE IS NOT READY FOR INSTALLATION AT THE TIME OF DELIVERY. ONCE THE SITE IS PREPARED, THE CUSTOMER IS THEN RESPONSIBLE FOR DELIVERING THE EQUIPMENT TO THE SITE.
5. PROVIDE INSTALLERS WITH PARKING CLOSE TO THE INSTALLATION SITE.
6. THE FOLLOWING MUST BE INSTALLED PRIOR TO EQUIPMENT INSTALLATION:
   - A DEDICATED DIRECT-DISTANCE-DIALING, VOICE GRADE TELEPHONE LINE.
   - EITHER A SEPARATE TELEPHONE DATA LINE OR A NETWORK CONNECTION.

FACILITY PLANNING IS TO BE COMPLETED WELL IN ADVANCE OF EQUIPMENT DELIVERY. THESE DRAWINGS NEED TO BE REVIEWED FOR ELECTRICAL, STRUCTURAL AND MECHANICAL REQUIREMENTS AS WELL AS CONTAINMENT NEEDS (E.G. RADIATION, MAGNETIC FIELDS, RADIO FREQUENCY) TO DETERMINE ANY ADDITIONAL CONSTRUCTION REQUIREMENTS OR MODIFICATION TO THE FACILITY.

SITE PROGRESS CHECKLIST

1. MAKE SURE THE ROOM MEETS POWER AND GROUNDING REQUIREMENTS INDICATED IN THE EQUIPMENT SPECIFICATIONS AND SUGGESTED LAYOUT.
2. MAKE SURE ALL CONSTRUCTION WORK HAS BEEN COMPLETED BEFORE THE EQUIPMENT DELIVERY AND INSTALLATION BEGINS.
3. MAKE SURE THE ROOM'S ENVIRONMENT IS CLEAN AND FREE OF DUST.
4. IF REQUIRED, HAVE STAMPED ARCHITECTURAL PLANS ON SITE.
5. PROVIDE AN ACCEPTABLE UNLOADING AREA WITH CLEAR ACCESS TO THE EQUIPMENT HOLDING AREA. IF REQUIRED, COORDINATE DELIVERY ROUTE WITH AN ACSI REPRESENTATIVE.
6. PROVIDE FOR REFUSE REMOVAL AND DISPOSAL. (E.G. CRATES, CARTONS, PACKING)
7. MAKE SURE ALL NATIONAL, STATE AND LOCAL CODES ARE MET.
8. ALL REQUIRED PERMITS ARE TO BE OBTAINED.
9. WHERE REQUIRED, SEISMIC DOCUMENTATION MUST BE AVAILABLE TO THE INSTALLERS.

POWER IS CRITICAL FOR EQUIPMENT OPERATION. IF POWER SPECIFICATIONS ARE NOT UPHELD, THE UNIT MAY NOT MEET MANUFACTURER'S SPECIFICATIONS. MEETING CRITICAL POWER REQUIREMENTS IS THE RESPONSIBILITY OF THE CUSTOMER AND THEIR ELECTRICAL CONTRACTOR.

ANY DEVIATION FROM THESE DRAWINGS MUST BE COMMUNICATED IN WRITING TO, AND REVIEWED BY ACSI PRIOR TO MAKING CHANGES.

SITE FINISHING CHECKLIST

1. MAKE SURE THE SUPPORT STRUCTURES FOR WALL, CEILING AND FLOOR MOUNTED EQUIPMENT HAVE BEEN INSTALLED ACCORDING TO THE LAYOUT. REQUIRED NUTS, BOLTS, ANCHORS AND OTHER HARDWARE SHOULD BE AVAILABLE ON SITE.
2. HAVE CEILINGS, WALLS AND FLOORS FINISHED AND PAINTED, EXCEPT AS REQUIRED FOR EQUIPMENT INSTALLATION.
3. MAKE SURE HEATING, VENTILATION, AIR CONDITIONING, PLUMBING AND LIGHTING ARE INSTALLED AND WORK PROPERLY.
4. HAVE TRENCH COVERS INSTALLED ACCORDING TO THE SUGGESTED LAYOUT.
5. MAKE SURE THAT ALL WIRES, JUNCTION BOXES, ACCESS FLOORING RACEWAYS AND CONDUITS HAVE BEEN INSTALLED WITH THE PROPER COVERS, SCREWS AND CHASE NIPPLES ACCORDING TO THE SUGGESTED LAYOUTS. THE FOLLOWING SPECIFICATIONS MUST BE MET:

   A. 10 FOOT (3 METRE) PIGTAILS AT ALL JUNCTION POINTS.
   B. NO ALUMINUM OR SOLID WIRES.
   C. ALL WIRING MUST BE THHN OR TFFN STRANDED COPPER THERMOPLASTIC 600 VOLT OR EQUIVALENT, UNLESS OTHERWISE STATED.
   D. GROUNDING IS CRITICAL TO EQUIPMENT FUNCTION AND PERSONNEL SAFETY. SITE MUST CONFORM TO WIRING SPECIFICATIONS SHOWN ON PLAN.

ABBREVIATIONS

AU	AUTOMATIC SWITCH
BLWM	BEAMLINE WATER MANIFOLD
BP#	BREAKER PANEL
CCP	CRYOGENIC COMPRESSOR
CMPS	COMBINATION MAGNET POWER SUPPLY
CHEM#1	CHEMISTRY CONTROL CABINET #1
CHEM#2	CHEMISTRY CONTROL CABINET #2
CTRL	MAIN CONTROL CABINET
CWDM	CABINET WATER DISTRIBUTION MANIFOLD
CWM	CYCLOTRON WATER MANIFOLD
CWR	CYCLOTRON WATER RETURN
CWS	CYCLOTRON WATER SUPPLY
CYCAP	CYCLOTRON AIR PANEL
DCMPS	DUAL COMBINATION MAGNET POWER SUPPLY
DP	DIFFUSION PUMP
HeCS	HELIUM COOLING SYSTEM
HYD PAK	HYDRAULIC PACKAGE
ISIS HV	ION SOURCE INJECTION SYSTEM HIGH VOLTAGE
LPO	LAST PERSON OUT SWITCH
MMPS	MAIN MAGNET POWER SUPPLY
MU	MANUAL SWITCH
NPT	NATIONAL PIPE THREAD
RF#1	RADIO FREQUENCY CABINET #1
RF#2	RADIO FREQUENCY CABINET #2
RFHVPS	FREQUENCY HIGH VOLTAGE POWER SUPPLY
SBOX#	SERVICE BOX
TP	TURBO PUMP
TR-19	TR-19 CYCLOTRON
TS	TARGET STATION
TWM	TARGET WATER MANIFOLD
WAT PAK	WATER PACKAGE

REV.	DCN No.	DATE	BY

APPROVED DATE

This drawing set is NOT FOR CONSTRUCTION.

DESIGNED:	[p.m.]	DATE:	12 MAY 2014
DRAWN:	DSu	DATE:	12 MAY 2014
CHECKED:	[p.m.]	DATE:	12 MAY 2014
APPROVED:	[p.m.]	DATE:	12 MAY 2014

ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE:
GENERIC NORTH AMERICA
TR-19 CYCLOTRON
PRE-INSTALLATION CHECKLIST

SCALE	TYPE	SIZE	SHEET OF	DWG. No.	REV.
AS SHOWN	BU	A0	01 / 16	BU-00XX	A

COMPRESSED AIR CONNECTION NOTES

CUSTOMER WILL SUPPLY A SOURCE OF INSTRUMENT QUALITY COMPRESSED AIR WITH DEW POINT AT LEAST 10°C BELOW AMBIENT TEMPERATURE, PARTICLE SIZE BELOW 5 MICRONS, OIL CONTENT NOT TO EXCEED ONE PART PER MILLION AS FOLLOWS:

a. SUPPLY PRESSURE OF 80 PSI (551 kPa):
   - FLOW RATE OF 300-350 LPM;
   - SUGGESTED TANK VOLUME OF 500 LITRES.

b. VALVED COMPRESSED AIR CONNECTIONS:
   - ONE PER AIR PANEL;
   - ONE PER WATER MANIFOLD.

c. CUSTOMER WILL SUPPLY AND INSTALL COMPRESSED AIR TUBES FROM COMPRESSED AIR OUTLETS TO AIR MANIFOLDS ON ACSI EQUIPMENT.

d. VALVED AIR SUPPLY TO MANIFOLDS (CYCLOTRON AIR AND WATER, AND CABINETS WATER) WILL BE EACH SUPPLIED WITH ONE PRESSURE REGULATOR FOR REGULATION BETWEEN 0-90 PSI (620 kPa).

EXHAUST CONNECTION NOTES

CUSTOMER IS RESPONSIBLE FOR CONNECTING EXHAUST OF VACUUM PUMPS TO VENTILATION SYSTEM.

COOLING SYSTEM NOTES

PRIMARY COOLING SYSTEM

1. PRESSURE DROP ACROSS HEAT EXCHANGER AND CONTROL VALVE: 5-15 PSI (34.4-103 kPa)
2. HEAT PRODUCED IN "RUN MODE": 85 kW
3. HEAT PRODUCED IN "STAND BY": 9 kW
4. REQUIRED FLOW THROUGH WATER PACKAGE: 250 LPM
5. REQUIRED CHILLED WATER SUPPLY TEMPERATURE TO WATER PACKAGE: 7-12°C, EXACT SET POINT TO BE SET DURING INS & COM
6. MAXIMUM PRESSURE: 70 PSI (483 kPa)
7. MAXIMUM PRESSURE DROP ACROSS CONTROL VALVE: 10 PSI (69 kPa)
8. REQUIRED TEMPERATURE ACCURACY: ±2°C

SECONDARY COOLING SYSTEM

1. SUPPLY PRESSURE: 85-100 PSI (586-689 kPa)
2. SUPPLY TEMPERATURE: 18-21°C

EQUIPMENT LAYOUT

REFER TO SHEET 3 FOR EQUIPMENT LAYOUT

THE TERM 'CUSTOMER' IS USED IN THIS DRAWING SET TO IDENTIFY THE RECIPIENT OF THE CYCLOTRON FROM ACSI AND THOSE WHO MAKE UP THE DESIGN AND CONSTRUCTION TEAM FOR THE RECIPIENT OF THE EQUIPMENT (ARCHITECTS; SUB-CONTRACTORS; PHYSICISTS; ENGINEERS; ETC.).

THESE DRAWINGS ARE PROVIDED BY ACSI TO ASSIST THE CUSTOMER IN PREPARING THE FACILITY FOR THE INSTALLATION OF THE EQUIPMENT BEING ACQUIRED FROM ACSI.

THESE DRAWINGS WERE DEVELOPED BASED ON INFORMATION PROVIDED BY THE CUSTOMER TO ACSI.

THESE DRAWINGS ARE NOT TO BE USED AS CONSTRUCTION DOCUMENTS.

THIS EQUIPMENT CREATES IONIZING RADIATION WHILE IN USE AND WILL BECOME ACTIVATED EVEN AFTER IT HAS BEEN SHUT OFF. APPROPRIATE COMPLIANCE AND LICENSING MUST BE ARRANGED BY THE CUSTOMER EARLY IN THE PLANNING PROCESS TO ENSURE ALL REGULATORY REQUIREMENTS ARE MET FOR EQUIPMENT INSTALLATION AND USE, INCLUDING RADIOISOTOPE PRODUCTION AND TRANSFER WITHIN THE FACILITY.

CUSTOMER IS RESPONSIBLE TO INSURE THAT RADIATION SHIELDING WITHIN THE FACILITY IS ADEQUATE TO MEET ALL REGULATORY REQUIREMENTS. THE SHIELDING INCLUDES, BUT NOT LIMITED TO: CYCLOTRON ROOM (OR VAULT) WALLS, ROOF, DOOR, MAZE, PLUGS; ALL TRENCHES OR CONDUITS; DETAIL SYSTEMS; DECAY STORAGE; POTENTIALLY RADIOACTIVE EXHAUSTS; CHIMNEYS; WALLS, ROOFS AND FLOORS THROUGHOUT THE FACILITY.

CUSTOMER'S STRUCTURAL ENGINEER MUST EVALUATE AND APPROVE FLOOR LOADING ALONG THE ENTIRE DELIVERY ROUTE OF CYCLOTRON, INCLUDING CRANES, TRUCKS, FORKLIFTS AND OTHER EQUIPMENT AS SPECIFIED BY THE CUSTOMER.

EACH TRADE MUST REVIEW ALL SHEETS OF THIS DRAWING PACKAGE SET AND THE ACSI SITE PLANNING GUIDE FOR INFORMATION NECESSARY TO DESIGN AND BUILD THE CYCLOTRON FACILITY. FOR CLARITY, CONDUITS, DUCTS, PIPING, DRAINS AND ETC. MAY BE SHOWN ON ANY OF THESE SHEETS.

ELECTRICAL NOTES

REFER TO SHEET 10-13 FOR ELECTRICAL LAYOUTS

1. ALL TRENCH COVERS, CONDUITS, CABLE LADDERS, ETC ARE FURNISHED / INSTALLED BY CUSTOMER.
2. ACSI SUPPLIES AND CONNECTS THE INTERCONNECTING CABLES BETWEEN THE CYCLOTRON SYSTEM COMPONENTS.
3. GROUND WIRES TO BE SAME SIZE OR LARGER THAN GIVEN RUN, INCLUDING MAIN FEEDERS.
4. CABLES SUPPLIED WITH THE CYCLOTRON SYSTEM ARE NOT PLENUM RATED.
5. SIZE ALL ELECTRICAL CONDUITS PER CODE UNLESS SPECIFIED OTHERWISE.
6. LOCATE ADDITIONAL INTERLOCKS AND SAFETY DEVICES AS REQUIRED BY CODE AND / OR CUSTOMER.
7. CUSTOMER IS RESPONSIBLE TO MAKE POWER CONNECTIONS TO ACSI EQUIPMENT.
8. CUSTOMER FURNISHES AND CONNECTS ALL 400 VOLT AC WIRING AND GROUND WIRES. GROUND WIRES ARE TO BE SAME SIZE OR LARGER THAN THE POWER WIRES FOR EACH RUN (INCLUDING MAIN FEEDERS).
9. ACSI SUPPLIES AND CONNECTS ELECTRICAL CABLES BETWEEN THE CYCLOTRON SYSTEM'S COMPONENTS. CUSTOMER IS RESPONSIBLE TO DETERMINE THAT DEPICTED CABLE ROUTING MEETS ALL CODES AND REGULATORY REQUIREMENTS AND THAT PLENUM RATING FOR ACSI SUPPLIED CABLES IS NOT REQUIRED.
10. CUSTOMER TO SIZE ALL ELECTRICAL CONDUITS PER CODE UNLESS SPECIFIED OTHERWISE BY ACSI.
11. 400 VOLT AC MAINS DISCONNECT PANEL AND ALL ELECTRICAL WIRING, CONDUITS, DUCTS, LADDERS, SWITCHES, TRENCH COVERS, ETC., ARE SUPPLIED AND INSTALLED BY CUSTOMER'S CONTRACTOR.
12. 400 VOLT AC POWER AND GROUND CONNECTIONS TO ACSI EQUIPMENT ARE TO BE COMPLETED BY CUSTOMER.
13. EXACT ROUTING OF ELECTRICAL CONDUITS ARE LEFT TO THE CUSTOMER'S DISCRETION AS LONG AS CONDUITS START AND END POINTS ARE AS DEPICTED.
14. CUSTOMER TO LOCATE ADDITIONAL INTERLOCKS AND SAFETY DEVICES AS REQUIRED BY REGULATORY AGENCIES AND/OR CUSTOMER.

STRUCTURAL NOTES

REFER TO SHEETS 7-9 FOR STRUCTURAL LAYOUTS

1. ALL DIMENSIONS UNLESS OTHERWISE NOTED ARE IN MILLIMETRES (MM).
2. ALL PITS UNLESS OTHERWISE NOTED ARE 400x400x300mm DEEP, REFER TO TYPICAL PIT DETAIL/SECTION.
3. ALL PITS UNLESS OTHERWISE NOTED ARE CONNECTED UNDERGROUND BY Ø100mm CONDUITS AS SHOWN.
4. ALL CONDUITS UNLESS OTHERWISE NOTED ARE 150mm BELOW FINISH FLOOR (B.F.F.).
5. ALL TRENCHES UNLESS OTHERWISE NOTED ARE 300mm DEEP, REFER TO TYPICAL TRENCH DETAIL/SECTION.
6. CEILING CLEARANCE MUST BE MAINTAINED DESPITE THE PRESENCE OF CEILING MOUNTED FIXTURES.
7. FLOOR SLABS ON WHICH EQUIPMENT IS TO BE INSTALLED MUST BE LEVEL TO 3.175mm in 3050mm ([⅛] INCH IN 10 FEET).
8. DIMENSIONS ARE TO FINISHED SURFACES OF THE ROOM.
9. CUSTOMER'S CONTRACTOR MUST PROVIDE ALL PENETRATIONS IN POST TENSION FLOORS.
10. CUSTOMER'S CONTRACTOR MUST PROVIDE AND INSTALL ANY NON-STANDARD ANCHORING.
11. DOCUMENTS FOR STANDARD ANCHORING METHODS WILL BE PROVIDED WITH ACSI EQUIPMENT DRAWINGS FOR GEOGRAPHIC AREAS THAT REQUIRE SUCH DOCUMENTATION.
12. CUSTOMER'S CONTRACTOR MUST PROVIDE AND INSTALL HARDWARE FOR "THROUGH THE FLOOR" ANCHORING AND/OR ANY BRACING UNDER ACCESS FLOORS. THE CONTRACTOR MUST ALSO PROVIDE FLOOR DRILLING THAT CANNOT BE COMPLETED BECAUSE OF AN OBSTRUCTION ENCOUNTERED WHILE DRILLING BY THE ACSI INSTALLER SUCH AS REBAR ETC.
13. CONDUITS REFERENCED ON THIS SHEET ARE USED FOR: DUCTING FOR ACSI FURNISHED ELECTRICAL CABLES, PRODUCT LINES; EXHAUSTS; CUSTOMER FURNISHED WATER LINES; AND ETC. IN SOME INSTANCES ALL OF THE ABOVE WILL BE CONTAINED IN TRENCHES AND WALL DUCTS WITH FEW IF ANY CONDUITS. ALTHOUGH SCHED. 80 PVC IS NORMALLY USED FOR THE CONDUITS SPECIFIED ON THIS SHEET, IT IS THE CUSTOMER'S RESPONSIBILITY TO ENSURE THAT ALL CODES AND REGULATORY REQUIREMENTS ARE MET.
14. ALL CONDUITS MUST HAVE SWEEP BENDS. ALL CONDUIT FITTINGS AND CONNECTIONS MUST BE CLEAN AND WATERPROOF WITHOUT BURRS OR JAGGED EDGES.
15. ALL CONDUITS MUST BE CAPPED AND GLUE-SEALED BY CUSTOMER BEFORE CONCRETE FLOOR IS POURED. CAPS WILL BE REMOVED BY CUSTOMER AFTER ALL CONCRETE WORK IS COMPLETED. CUSTOMER IS RESPONSIBLE TO REMOVE ALL WATER AND DEBRIS FROM CONDUITS, DUCTS, TRENCHES, ETC.

GENERAL SPECIFICATIONS

1. THE REQUIRED CEILING HEIGHT INDICATED ON THESE PLANS IS TO ENSURE EQUIPMENT FUNCTION IS NOT INHIBITED. CONSULT WITH ACSI REGARDING ACCEPTABILITY OF OTHER CEILING HEIGHTS.
2. CHECK ALL DOOR OPENINGS AND HALLWAYS FROM DELIVERY LOCATION TO WHERE EQUIPMENT IS TO BE INSTALLED TO ENSURE THE ROUTE WILL ACCOMMODATE THE EQUIPMENT PHYSICALLY AND STRUCTURALLY.
3. RADIATION PROTECTION REQUIREMENTS ARE NOT INDICATED ON THIS PLAN. WHERE NEEDED PER NATIONAL OR LOCAL CODE THEY SHALL BE SPECIFIED BY A QUALIFIED HEALTH PHYSICIST.
4. THE DEVELOPMENT OF THE EQUIPMENT LAYOUT, ROOM DIMENSIONS, MECHANICAL AND ELECTRICAL SPECIFICATIONS ARE PREDICATED UPON THE BEST INFORMATION OBTAINABLE FROM THE SITE, COUPLED WITH THE CUSTOMER'S KNOWN DESIRES. ARCHITECTURAL AND/OR ELECTRICAL CHANGES INCLUDING RELOCATION OF EQUIPMENT ILLUSTRATED ON THESE SHEETS ARE ALLOWED ONLY FOLLOWING REVIEW BY ACSI AND WITH ACSI'S WRITTEN REVIEW. ACSI RESERVES THE RIGHT TO MAKE ON THE JOB CHANGES BECAUSE OF CUSTOMER REQUIREMENTS AND/OR OBSTACLES IN CONSTRUCTION, ETC.
5. ALL WORK TO BE IN COMPLIANCE WITH NATIONAL AND LOCAL BUILDING SAFETY CODES, BE SUPPLIED AND INSTALLED BY THE CUSTOMER OR CUSTOMER'S CONTRACTORS.
6. DIMENSIONS ARE TO FINISHED SURFACES OF ROOM.

SITE ENVIRONMENT SPECIFICATIONS

1. AMBIENT OPERATING TEMPERATURE: 18°C TO 22°C (64°F TO 72°F), MAXIMUM ALLOWABLE TEMPERATURE CHANGE OF 3°C (5°F) PER HOUR.
2. HUMIDITY: 30 TO 60 PERCENT NON-CONDENSING, MAXIMUM ALLOWABLE CHANGE OF 5 PERCENT PER HOUR.
3. ALTITUDE: NOT TO EXCEED 2440 METRES (8000 FEET) ABOVE SEA LEVEL.
4. DO NOT RESTRICT THE AIR INTAKE AT THE FRONT OR AIR EXHAUST AT THE TOP AND REAR OF THE ELECTRONICS CABINETS.
5. STATIC CHARGES ASSOCIATED WITH LOWER HUMIDITY LEVELS MAY DAMAGE ELECTRONICS AND MAY INTERFERE WITH SYSTEM OPERATION.
6. SOME PROCEDURES REQUIRE THE USE OF RADIOACTIVE GASES. STEPS MUST BE TAKEN TO ENSURE THAT THE ESCAPE OF SUCH GASES CAN BE CONTROLLED IN A SAFE AND EFFICIENT MANNER. ESCAPED GAS MUST NOT BE ALLOWED TO ENTER ACTIVE AIR CONDITIONING SYSTEMS.

WATER AND GAS CONNECTION NOTES

1. CUSTOMER WILL SUPPLY AND INSTALL AN EXTERNAL CHILLER TO PROVIDE COOLING WATER TO THE WATER PACKAGE. CHILLER MUST SUPPLY 250 LPM CHILLED WATER AND WATER TEMPERATURE MUST BE AT ACSI SPECIFIED TEMPERATURE (BETWEEN 7-12°C). TEMPERATURE MUST BE MAINTAINED TO ±3°C. CHILLER MUST BE ABLE TO REMOVE UP TO 85 kW HEAT LOAD. REQUIREMENTS WILL VARY IF NOT USING WATER AS COOLING MEDIA.
2. CUSTOMER WILL PROVIDE AND INSTALL ALL PIPING AND CONNECTORS BETWEEN CHILLER AND ACSI WATER PACKAGE. PIPES MUST BE INTERNALLY CLEANED PRIOR TO INSTALLATION.
3. CUSTOMER WILL PROVIDE AND INSTALL ALL PIPING AND CONNECTORS BETWEEN THE ACSI WATER PACKAGE AND ACSI EQUIPMENT. PIPES MUST BE INTERNALLY CLEANED PRIOR TO INSTALLATION.
4. CUSTOMER WILL SUPPLY AND INSTALL A FILTER ON THE CHILLED WATER SUPPLY PIPES, IN BETWEEN CHILLER AND WATER PACKAGE.
5. CUSTOMER WILL PROVIDE A VALVED POTABLE WATER SUPPLY (10-12 LPM) COMPLETE WITH BACKFLOW CHECK VALVE.
6. CUSTOMER WILL PROVIDE FLOOR DRAINS APPROPRIATELY LOCATED. AT A MINIMUM ONE MUST BE LOCATED UNDER THE WATER MANIFOLDS, ONE MUST BE LOCATED NEAR THE WATER PACKAGE AND ONE IN ELECTRONICS ROOM. FLOOR DRAINS IN ACTIVE AREAS SHOULD BE CONNECTED TO A HOLDING TANK. ADDITIONAL FLOOR DRAINS SHOULD BE PLACED IN TRENCHES IN EQUIPMENT ROOM AND CYCLOTRON VAULT.
7. CUSTOMER WILL SUPPLY AND INSTALL GAS CYLINDERS WITH PRESSURE REGULATORS, TUBING AND CONNECT TO ACSI DEVICES.
8. CUSTOMER WILL SUPPLY AND INSTALL THE GAS CYLINDERS FOR ION SOURCE, TARGETS AND TRANSFER SYSTEMS, INCLUDING PRESSURE REGULATORS AND SHUTOFF VALVES.
9. CUSTOMER WILL SUPPLY AND INSTALL ALL TRANSFER LINES, TUBES AND PIPES BETWEEN GAS CYLINDERS AND THE ACSI GAS DISTRIBUTION MANIFOLDS. ACSI WILL PROVIDE THE CUSTOMER WITH A LIST OF GAS CYLINDERS AND GAS LINES REQUIRED FOR THE CYCLOTRON.
10. CUSTOMER WILL SUPPLY AND INSTALL ALL TRANSFER LINES, TUBES AND PIPES FROM THE CYCLOTRON TO RADIOCHEMISTRY LABORATORY AND TO THE INSIDE OF HOT CELLS. ACSI WILL PROVIDE THE CUSTOMER WITH A LIST OF SPECIFICATIONS FOR ALL TRANSFER LINES, PIPES AND TUBES FOR THE CYCLOTRON AND SPECIFIC TARGETS.

GASES REQUIRED

HELIUM COOLING:
- HP HELIUM
- PRESSURE REGULATOR 0-50 PSI
- VALVE BETWEEN REGULATOR AND HELIUM COOLING SYSTEM

CHEMISTRY TRANSFER:
- UHP HELIUM OR NITROGEN
- PRESSURE REGULATOR 0-80 PSI
- VALVE BETWEEN REGULATOR AND TRANSFER SYSTEM

CYCLOTRON VENTING:
- UHP DRY NITROGEN
- PRESSURE REGULATOR 0-15 PSI
- VALVE BETWEEN REGULATOR AND CYCLOTRON

ION SOURCE:
- UHP DRY HYDROGEN
- PRESSURE REGULATOR -15 TO +30 PSI
- VALVE BETWEEN REGULATOR AND CYCLOTRON

JUNCTION POINT NOTES

1. ALL JUNCTION BOXES, CONDUITS, DUCTS, DUCT DIVIDERS, SWITCHES, CIRCUIT BREAKERS, ETC. ARE TO BE SUPPLIED AND INSTALLED BY CUSTOMER'S ELECTRICAL CONTRACTOR.
2. CONDUITS AND DUCT RUNS SHALL HAVE SWEEP RADIUS BENDS.
3. CONDUITS AND DUCT ABOVE CEILING OR BELOW FINISHED FLOOR MUST BE INSTALLED AS NEAR TO CEILING OR FLOOR AS POSSIBLE TO REDUCE RUN LENGTH.
4. 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.

REV.	DCN No.	DATE	BY

APPROVED DATE

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DESIGNED: [p.m.]	DATE:	12 MAY 2014
DRAWN: DSu	DATE:	12 MAY 2014
CHECKED: [p.m.]	DATE:	12 MAY 2014
APPROVED: [p.m.]	DATE:	12 MAY 2014

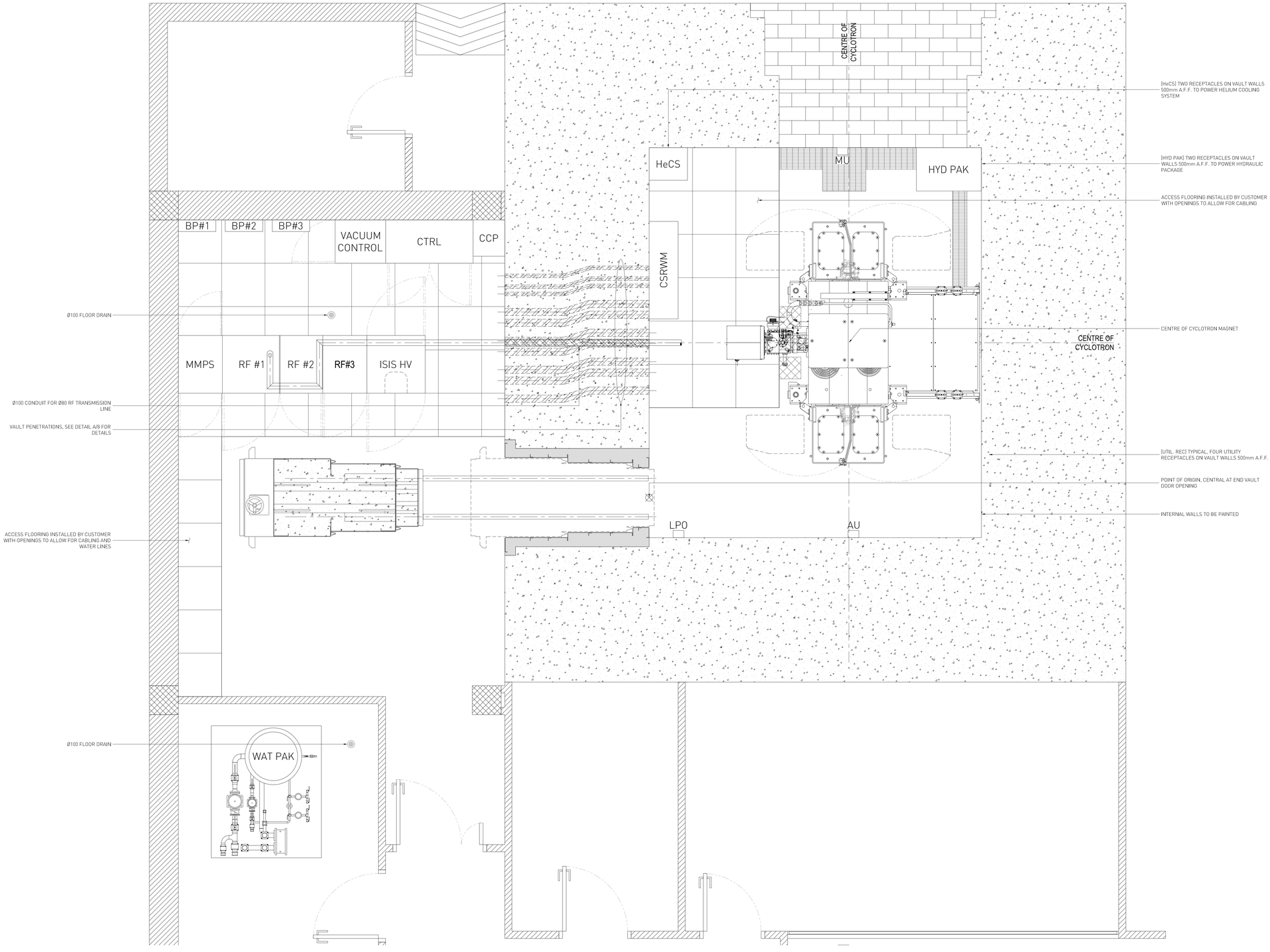
ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE: GENERIC NORTH AMERICA TR-19 CYCLOTRON GENERAL NOTES

SCALE	TYPE	SIZE	SHEET OF	DWG. No.	REV.
AS SHOWN	BU	A0	02 / 16	BU-00XX	A

~ EQUIPMENT LAYOUT ~

SCALE 1:20



~ EQUIPMENT LAYOUT NOTES ~

REFER TO SHEET 7 OF 16 FOR STRUCTURAL LAYOUT NOTES

REV.	DCN No.	DATE	BY

APPROVED DATE

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APPROVED:	[p.m.]	DATE:	12 MAY 2014

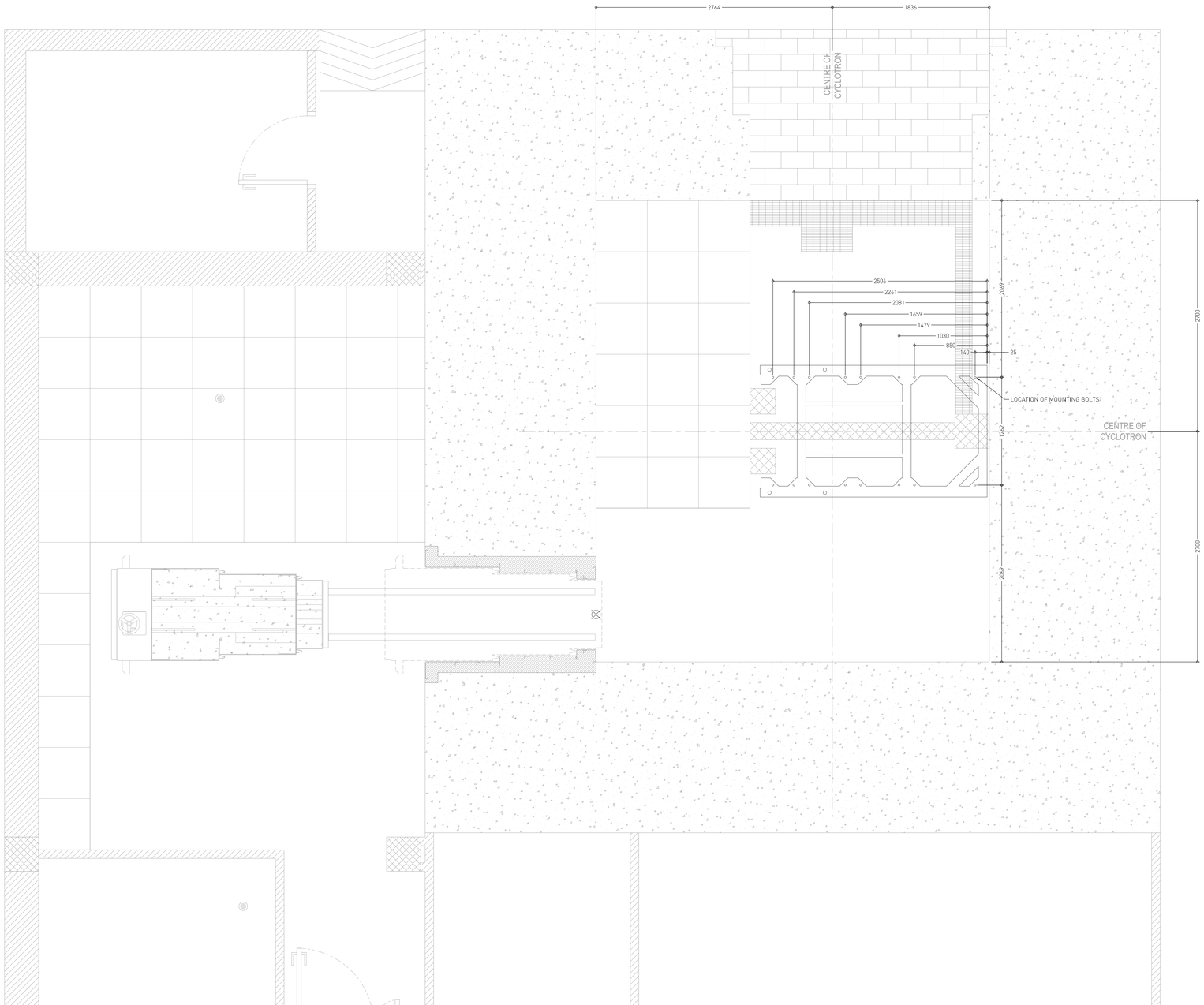
ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE:
GENERIC NORTH AMERICA
TR-19 CYCLOTRON
EQUIPMENT LAYOUT

SCALE	TYPE	SIZE	SHEET	OF	DWG. No.	REV.
AS SHOWN	BU	A0	03	16	BU-00XX	A

~ CYCLOTRON LAYOUT ~

SCALE 1:20



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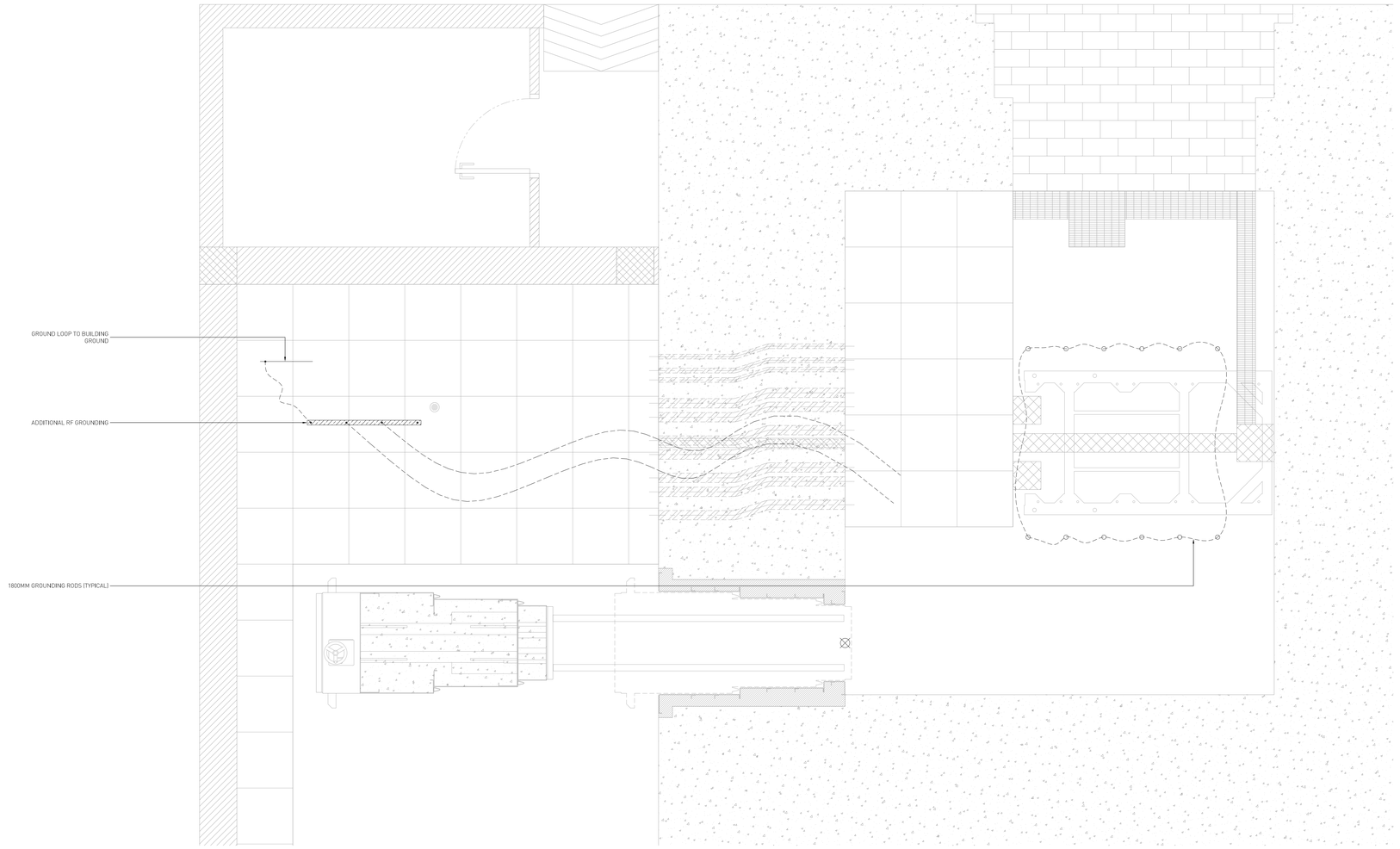
ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE:
GENERIC NORTH AMERICA
TR-19 CYCLOTRON
CYCLOTRON LAYOUT

SCALE	TYPE	SIZE	SHEET OF	DWG. No.	REV.
AS SHOWN	BU	A0	04 / 16	BU-00XX	A

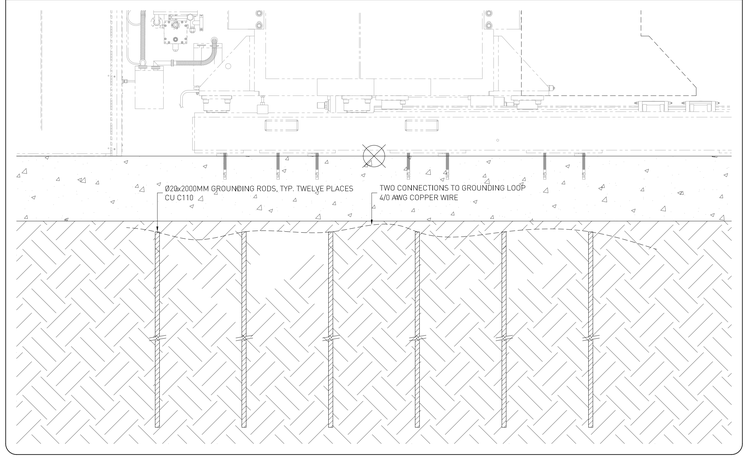
ELECTRICAL GROUND DETAILS

SCALE 1:20



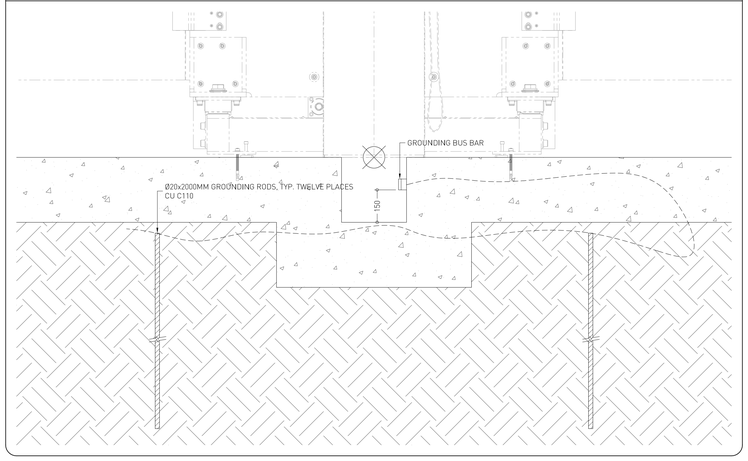
ELECTRICAL GROUNDING SECTION A

SCALE 1:10



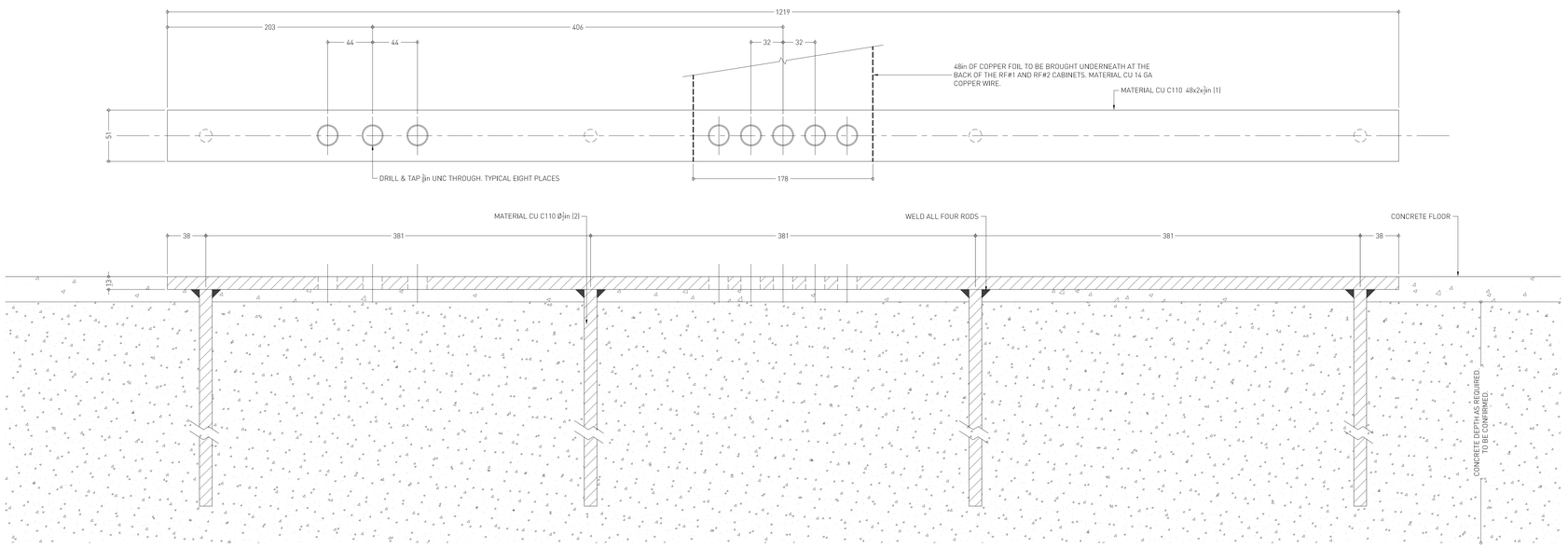
ELECTRICAL GROUNDING SECTION B

SCALE 1:10



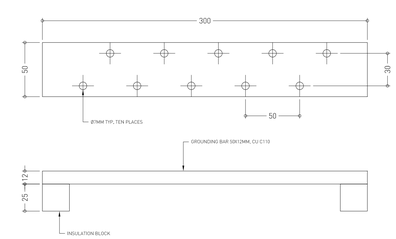
ADDITIONAL RF GROUNDING

SCALE 1:2



ELECTRICAL GROUNDING BUS BAR

SCALE 1:2



GROUNDING NOTES

1. THE LENGTH OF THE RODS SHOULD BE ACCORDING TO LOCAL STANDARDS. ACSI RECOMMENDS 1.8 METRE (6 FOOT) LONG RODS OF 19 MILLIMETRES (¾ INCH) DIAMETER. THE TYPE OF SOIL COULD LIMIT THE LENGTH.
2. PLUG THE THREADED HOLES WITH ⅜ UNC SCREWS.

REV.	DCN No.	DATE	BY

APPROVED DATE

This drawing set is NOT FOR CONSTRUCTION.

DESIGNED:	[p.m.]	DATE: 12 MAY 2014
DRAWN:	DSu	DATE: 12 MAY 2014
CHECKED:	[p.m.]	DATE: 12 MAY 2014
APPROVED:	[p.m.]	DATE: 12 MAY 2014

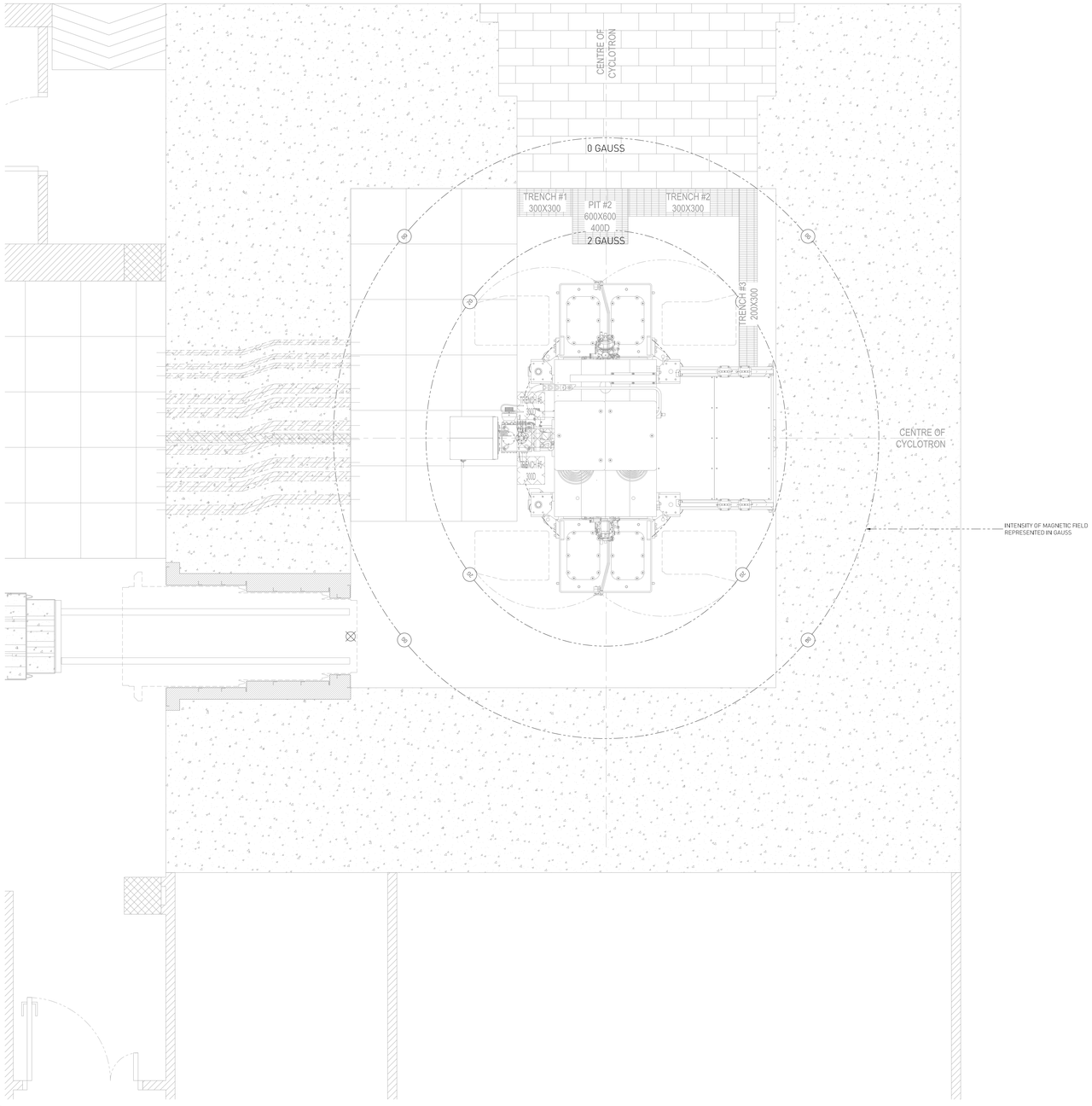
ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE:
GENERIC NORTH AMERICA
TR-19 CYCLOTRON
ELECTRICAL GROUNDING LAYOUT

SCALE	TYPE	SIZE	SHEET OF	DWG. No.	REV.
AS SHOWN	BU	A0	05 / 16	BU-00XX	A

MAGNETIC FIELD LAYOUT

SCALE 1:30



MAGNETIC INTERFERENCE SPECIFICATIONS

THE STATIC MAGNETIC FIELD IS THREE-DIMENSIONAL AND EXTENDS INTO SPACE ABOVE AND BELOW THE MAGNET AS WELL AS TO THE SURROUNDING SPACE ON THE SAME LEVEL. OBJECTS WITHIN THIS THREE-DIMENSIONAL SPACE CAN BE AFFECTED BY THE MAGNETIC FIELD (E.G. CARDIAC PACEMAKERS, NEUROSTIMULATORS, AND OTHER BIOSTIMULATION DEVICES) OR CAN AFFECT THE MAGNETIC FIELD (E.G. STRUCTURAL STEEL, ELEVATORS AND OTHER LARGE STATIONARY OR MOVING MASSES). THEREFORE, ALL FERROMAGNETIC MATERIAL WITHIN THIS THREE-DIMENSIONAL MAGNETIC FIELD MUST BE THOROUGHLY EXAMINED TO ENSURE IT IS NOT SIGNIFICANTLY AFFECTED BY NOR AFFECTS THE MAGNETIC FIELD.

IN THE VOLUME OR AREA WHERE THE MAGNETIC FLUX DENSITY IS GREATER THAN FIVE GAUSS, PERSONNEL WITH CARDIAC PACEMAKERS, EQUIPMENT CONTAINING MAGNETIC RED SWITCHES, ANEURYSM AND SURGICAL CLIPS, NEUROSTIMULATORS AND OTHER BIOSTIMULATION DEVICES MUST NOT ENTER THIS ZONE. SIGNS ARE TO BE POSTED OUTSIDE THE FIVE GAUSS LINE ALERTING PERSONNEL OF THIS REQUIREMENT. SINCE THE MAGNETIC FIELD IS THREE-DIMENSIONAL, SIGNS ARE ALSO TO BE POSTED IN AREAS ABOVE AND BELOW THE MRI ROOM IN WHICH THE FIVE GAUSS ZONE EXISTS. PHYSICAL BARRIERS ARE RECOMMENDED. THE CUSTOMER IS RESPONSIBLE FOR ESTABLISHMENT OF NECESSARY SAFEGUARDS, SCREENING AND CONTROL PROTOCOLS AT THE SITE.

REV.	DCN No.	DATE	BY

APPROVED | DATE

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DESIGNED:	[p.m.]	DATE: 12 MAY 2014
DRAWN:	DSu	DATE: 12 MAY 2014
CHECKED:	[p.m.]	DATE: 12 MAY 2014
APPROVED:	[p.m.]	DATE: 12 MAY 2014

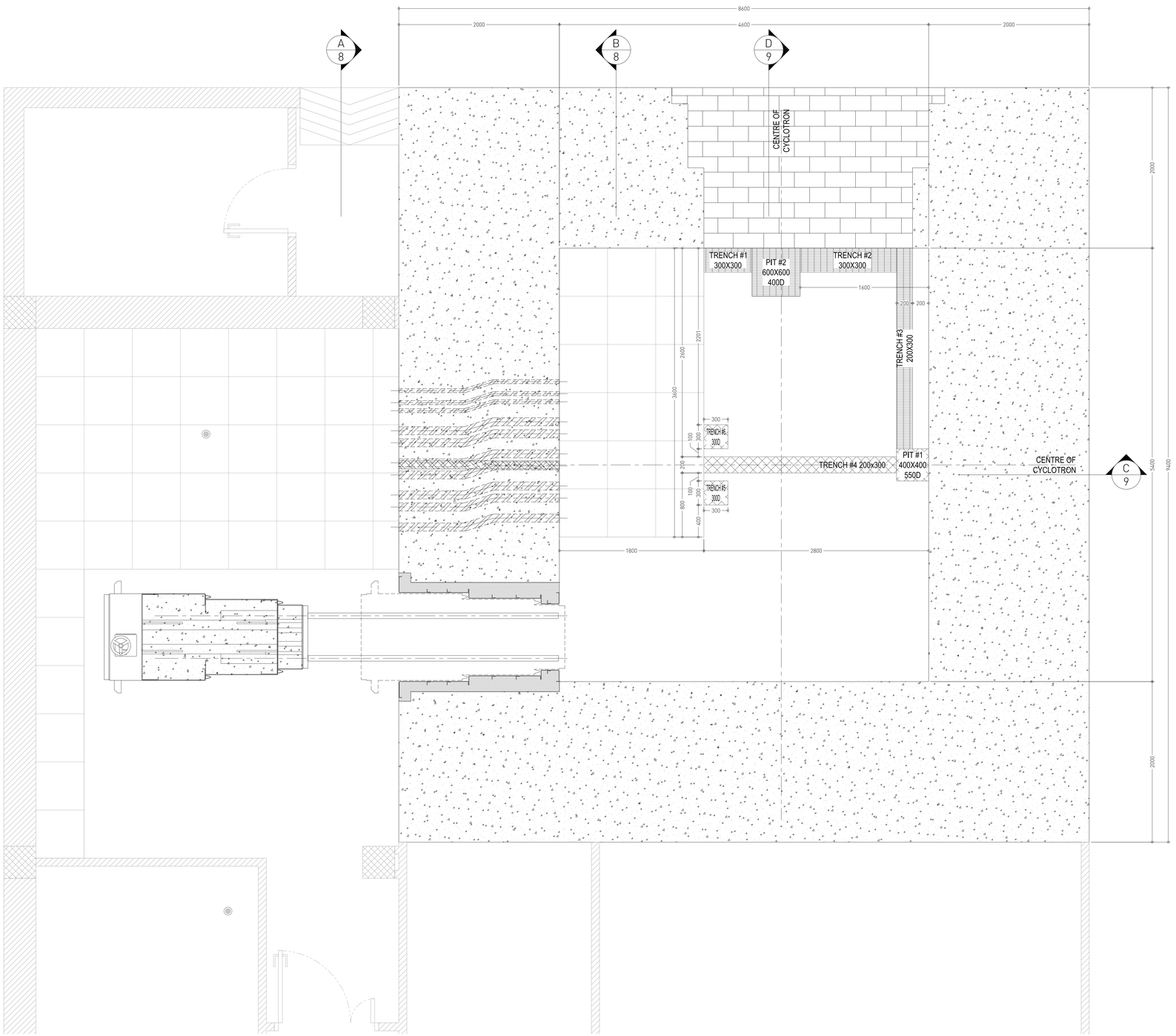
ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE:
GENERIC NORTH AMERICA
TR-19 CYCLOTRON
MAGNETIC FIELD LAYOUT

SCALE	TYPE	SIZE	SHEET OF	DWG. No.	REV.
AS SHOWN	BU	A0	06 / 16	BU-00XX	A

STRUCTURAL LAYOUT AND DIMENSIONS

SCALE 1:30



STRUCTURAL LAYOUT NOTES

REFER TO SHEET 2 FOR EQUIPMENT LAYOUT NOTES

CONDUITS REFERENCED ON THIS SHEET ARE USED FOR:

- DUCTING FOR ACSI FURNISHED ELECTRICAL CABLES, PRODUCT LINES;
- EXHAUSTS;
- CUSTOMER FURNISHED WATER LINES.

IN SOME INSTANCES ALL OF THE ABOVE WILL BE CONTAINED IN TRENCHES AND WALL DUCTS WITH FEW IF ANY CONDUITS. ALTHOUGH SCHEDULE 80 PVC IS NORMALLY USED FOR THE CONDUITS SPECIFIED ON THIS SHEET, IT IS THE CUSTOMER'S RESPONSIBILITY TO INSURE THAT ALL CODES AND REGULATORY REQUIREMENTS ARE MET.

ALL CONDUITS MUST HAVE SWEEP BENDS. ALL FITTINGS AND CONNECTIONS MUST BE CLEAN AND WATERPROOF WITHOUT BURRS OR JAGGED EDGES.

ALL CONDUITS MUST BE CAPPED AND GLUE-SEALED BY CUSTOMER BEFORE CONCRETE FLOOR IS POURED. CAPS WILL BE REMOVED BY CUSTOMER AFTER ALL CONCRETE WORK IS COMPLETED; CUSTOMER IS RESPONSIBLE TO REMOVE ALL WATER AND DEBRIS FROM CONDUITS, DUCTS, TRENCHES, ETC.

This drawing set is NOT FOR CONSTRUCTION.

REV.	DCN No.	DATE	BY

DESIGNED:	[p.m.]	DATE: 12 MAY 2014
DRAWN:	DSu	DATE: 12 MAY 2014
CHECKED:	[p.m.]	DATE: 12 MAY 2014
APPROVED:	[p.m.]	DATE: 12 MAY 2014

APPROVED DATE

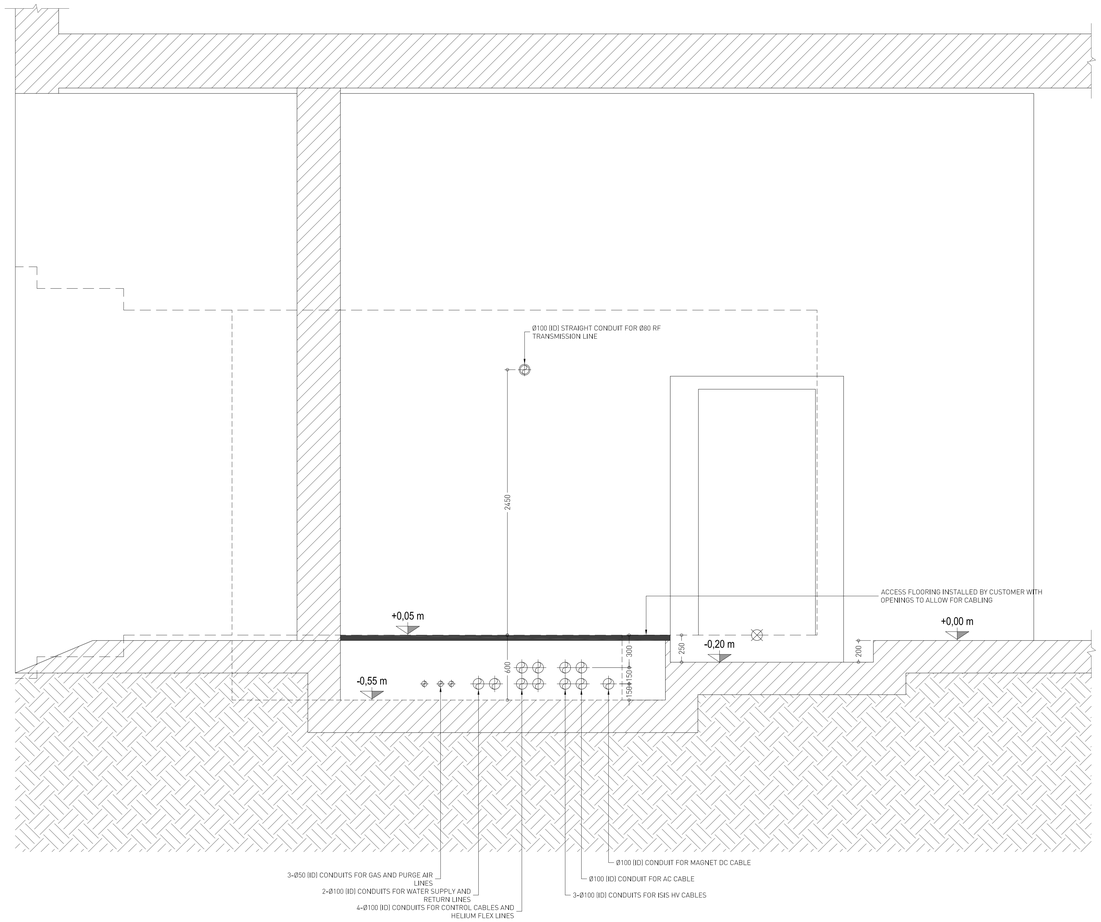
ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE:
GENERIC NORTH AMERICA
TR-19 CYCLOTRON
STRUCTURAL LAYOUT

SCALE	TYPE	SIZE	SHEET OF	DWG. No.	REV.
AS SHOWN	BU	A0	07 / 16	BU-00XX	A

SECTION A-A

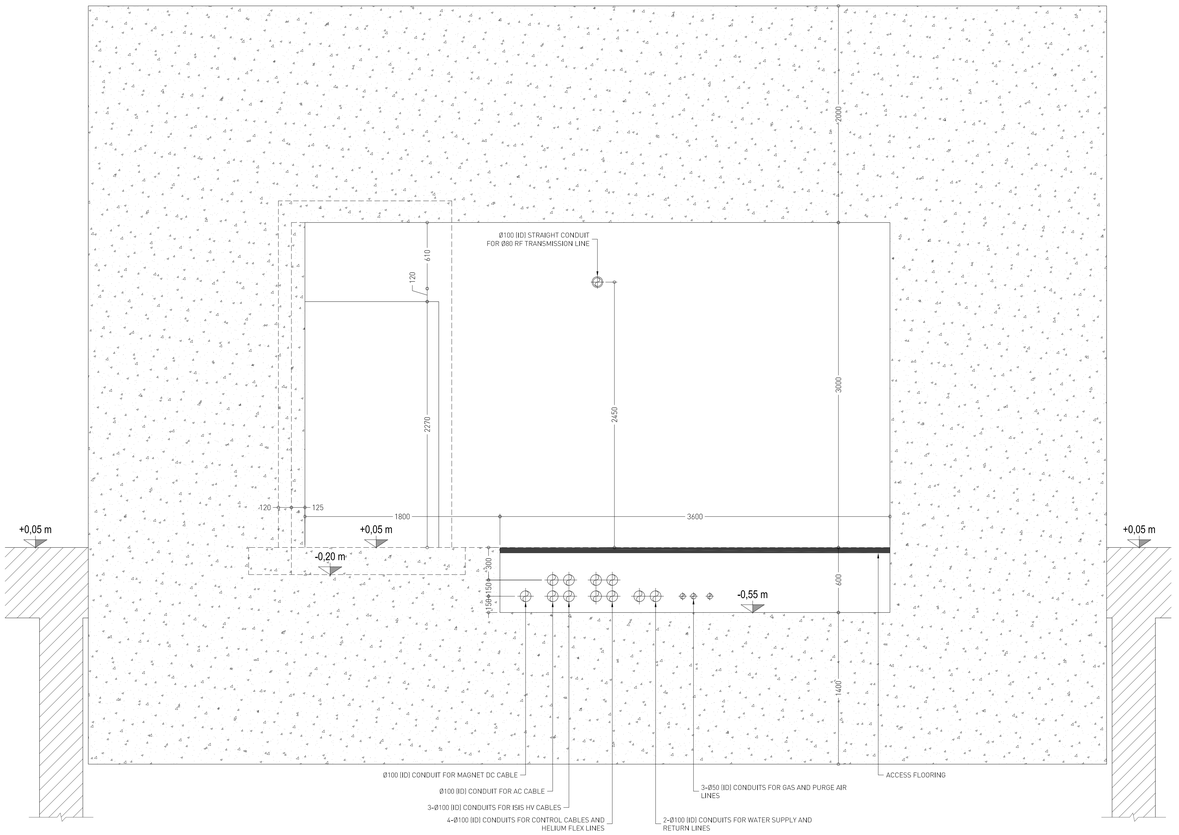
SCALE 1:30



A 8 SECTION A-A
SCALE = 1:20

SECTION B-B

SCALE 1:30



B 8 SECTION B-B
SCALE = 1:20

REV.	DCN No.	DATE	BY

APPROVED DATE

This drawing set is NOT FOR CONSTRUCTION.

DESIGNED: [p.m.]	DATE:	12 MAY 2014
DRAWN: DSu	DATE:	12 MAY 2014
CHECKED: [p.m.]	DATE:	12 MAY 2014
APPROVED: [p.m.]	DATE:	12 MAY 2014

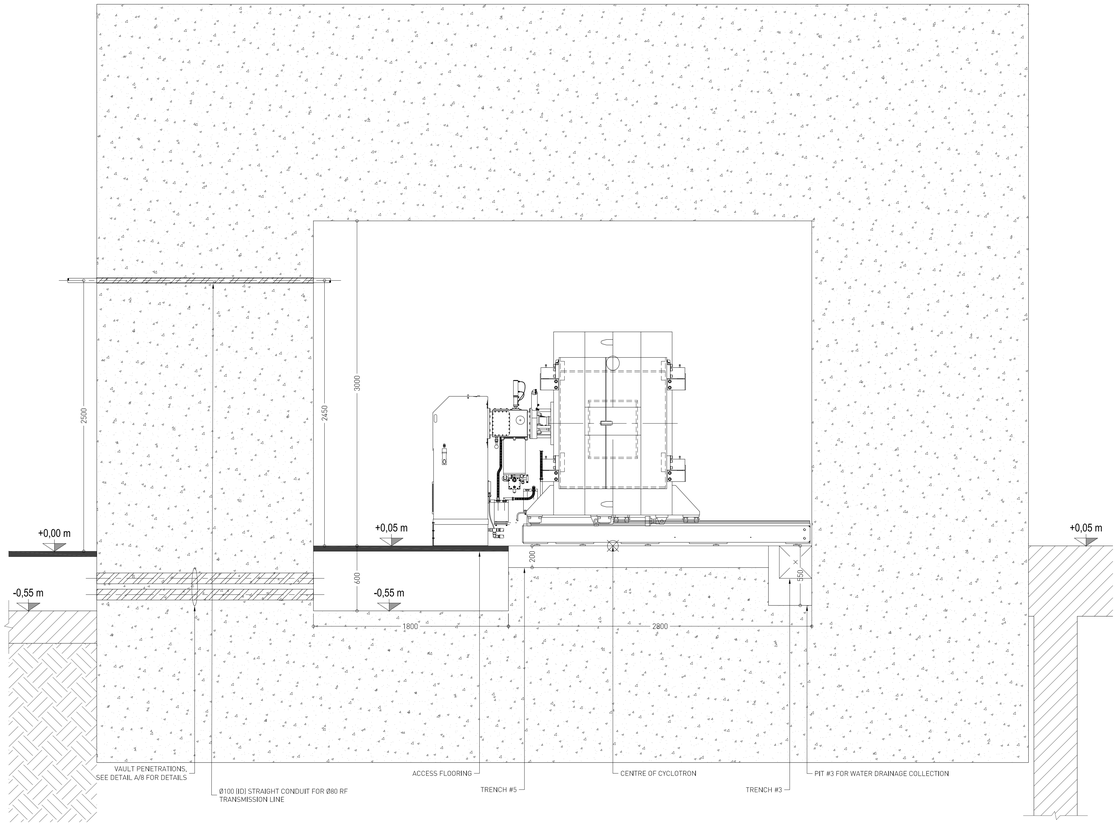
ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE:
GENERIC NORTH AMERICA
TR-19 CYCLOTRON
STRUCTURAL SECTIONS

SCALE	TYPE	SIZE	SHEET	OF	DWG. No.	REV.
AS SHOWN	BU	A0	08	16	BU-00XX	A

SECTION C-C

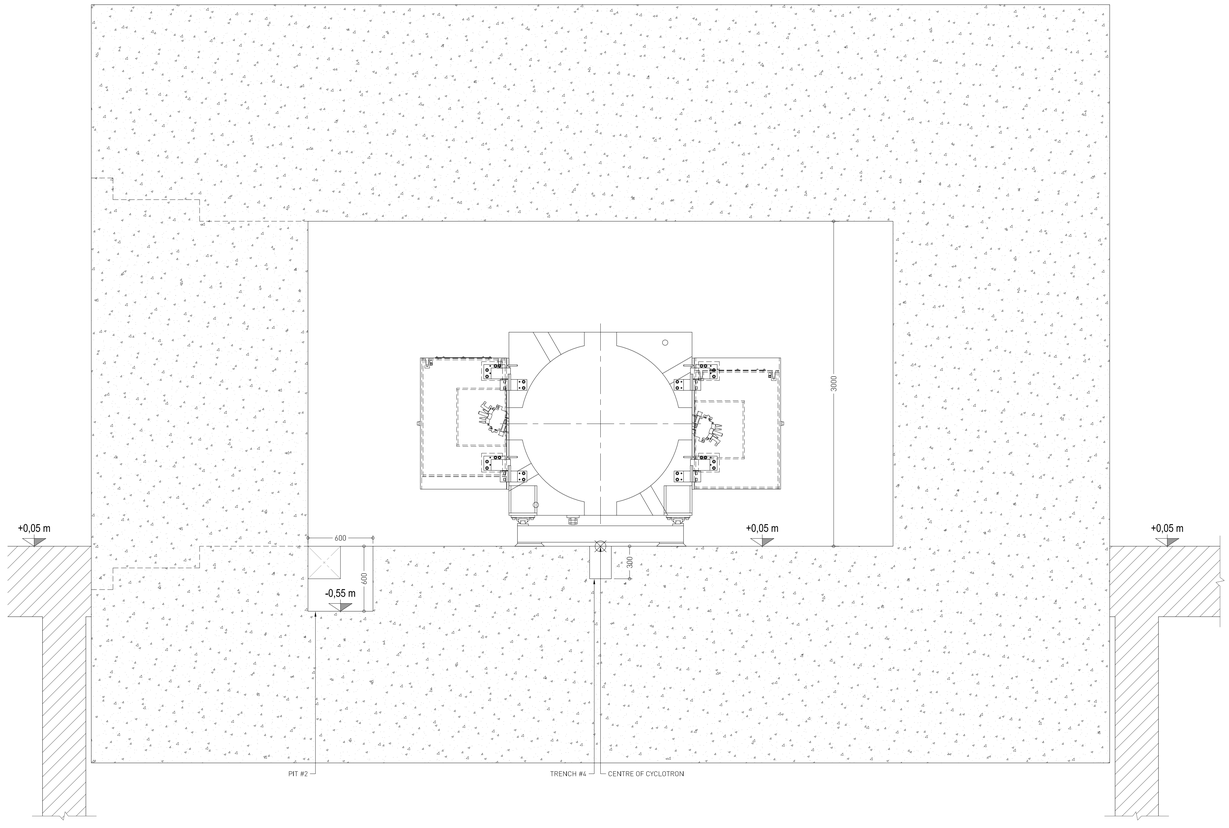
SCALE 1:20



C 9 SECTION C-C
SCALE = 1:20

SECTION D-D

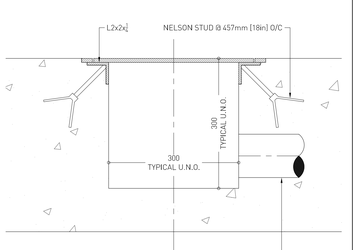
SCALE 1:20



C 9 SECTION D-D
SCALE = 1:20

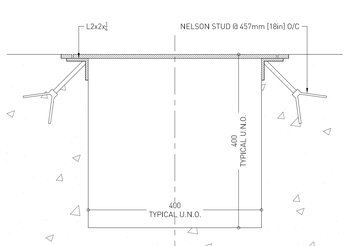
TRENCH DETAIL

SCALE 1:5



PIT DETAIL

SCALE 1:5



REV.	DCN No.	DATE	BY

APPROVED DATE

This drawing set is NOT FOR CONSTRUCTION.

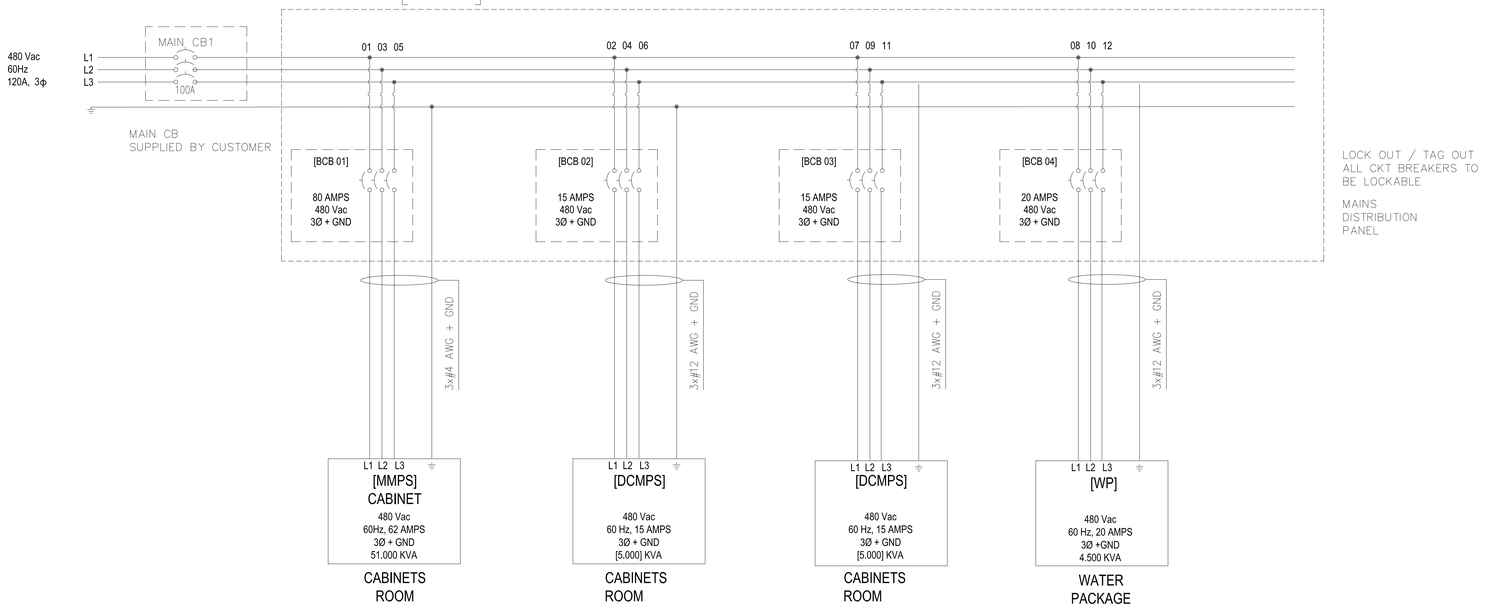
DESIGNED:	[p.m.]	DATE:	12 MAY 2014
DRAWN:	DSu	DATE:	12 MAY 2014
CHECKED:	[p.m.]	DATE:	12 MAY 2014
APPROVED:	[p.m.]	DATE:	12 MAY 2014

ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE:
GENERIC NORTH AMERICA
TR-19 CYCLOTRON
STRUCTURAL SECTIONS

SCALE	TYPE	SIZE	SHEET OF	DWG. No.	REV.
AS SHOWN	BU	A0	09 / 16	BU-00XX	A

BREAKER PANEL No.1 [BP01] LOCATED IN CABINETS ROOM



SCHEDULE OF [BPO1] LOADS
480Vac, 60Hz, 100AMPS

BCBK	POLES	AMPS	KVA	LOCATION, LOAD NAME, CABLE SIZE
BCB 01	3	80 A	51.000	[MMPS] MAIN MAGNET POWER SUPPLY CABINET CIRCUIT BREAKER, (3x#4 AWG + GND)
BCB 02	3	15 A	[5.000]	[DCMPS] (3x12 AWG + GND)
BCB4&5	3	15 A	[5.000]	[DCMPS] (3x12 AWG + GND)
BCB4&5	3	20 A	[5.000]	[WATER PACK] (3x12 AWG + GND)

TOTAL: 60 KVA

ELECTRICAL NOTES:

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

~ POWER SPECIFICATIONS ~

TITLE: ELECTRICAL SPECIFICATIONS
TYPE: TR19 ACSI CYCLOTRON

THIS PLAN IS SUBMITTED TO SUGGEST LOCATION OF ACSI EQUIPMENT AND ASSOCIATED APPARATUS, ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. IN PREPARING THIS PLAN, EVERY EFFORT HAS BEEN MADE TO CONFORM DETAILS TO ACTUAL EQUIPMENT EXPECTED TO BE INSTALLED, IT IS NOT TO BE USED FOR ACTUAL CONSTRUCTION PURPOSES, HOWEVER, AND THE COMPANY CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

POWER REQUIREMENTS

THE SUPPLY SHOULD BE COMPLETELY FREE OF NOISE OR TRANSIENTS (ESPECIALLY RF) FROM OTHER ELECTRICALLY OPERATED EQUIPMENT. SURGES, SAGS OR INSTANTANEOUS VARIATIONS IN LINE VOLTAGE FROM EXTERNAL SOURCES MUST NOT EXCEED 5 PERCENT OR HAVE MORE THAN 0.2 SECOND/5 CYCLES DURATION, OR OCCUR MORE THAN TEN TIMES PER HOUR.

CIRCUIT BREAKERS SHOULD HAVE A TIME DELAY OF GREATER THAN ONE CYCLE TO WITHSTAND SWITCH-ON SURGE.

THE FOLLOWING IS SYSTEM POWER REQUIREMENTS:

- o TOTAL INSTALLED POWER 150 kVA
- o NOMINAL VOLTAGE 480 Vac, 60Hz
- o WIRE SYSTEM 3 PHASE + GND
- o VARIATION OF NOMINAL LINE VOLTAGE ± 5%

POWER SUPPLY TEST

IT IS RECOMMENDED THAT THE POWER SUPPLY BE MONITORED TO ASCERTAIN THE AVERAGE LINE VOLTAGE, SURGES, SAGS, IMPULSES AND FREQUENCY OF THE SUPPLY VOLTAGE. THE ANALYSIS OF A SIMULATED LOAD, USING A POWER SYSTEMS ANALYZER CAPABLE OF THE ABOVE SPECIFICATIONS, SHOULD BE CARRIED OUT OVER A CONTINUOUS SEVEN DAY PERIOD PRIOR TO INSTALLATION. THE RESULTS OF THIS ANALYSIS SHOULD BE REVIEWED WITH THE LOCAL SERVICE REPRESENTATIVE TO DETERMINE WHETHER A VOLTAGE/FREQUENCY STABILIZER, POWER LINE PROTECTOR OR FILTERS ARE REQUIRED TO BE INSTALLED BY THE PURCHASER, AS PART OF THE PREINSTALLATION WORK, TO COMPLY WITH THE ABOVE ELECTRICAL REQUIREMENTS.

NOTE: GROUND WIRES ARE TO BE THE SAME SIZE AS PHASE WIRES.

This drawing set is NOT FOR CONSTRUCTION.

REV.	DCN No.	DATE	BY

APPROVED DATE

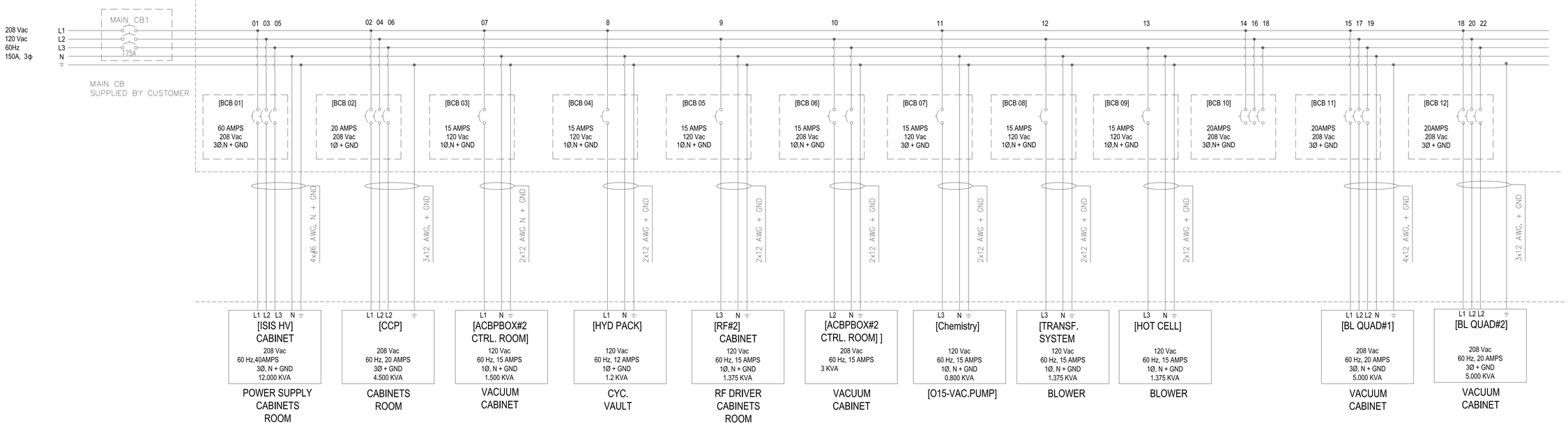
DESIGNED:	I.P.	DATE: 12 MAY 2014
DRAWN:	DSu	DATE: 12 MAY 2014
CHECKED:	I.P.	DATE: 12 MAY 2014
APPROVED:	T.T.	DATE: 12 MAY 2014

ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE: GENERIC NORTH AMERICA
TR-19 CYCLOTRON
ELECTRICAL LOAD SCHEDULE - 1 OF 4

SCALE	TYPE	SIZE	SHEET OF	DWG. No.	REV.
AS SHOWN	BU	A0	10 / 16	BU-00XX	A

BREAKER PANEL No.2 [BP02] LOCATED IN CABINETS ROOM



FOR CONTINUATION REFER TO SHEET 3 OF 4

SCHEDULE OF [BP02] LOADS
208 Vac / 120 Vac, 60Hz, 150 AMPS

BCBK	POLES	AMPS	KVA	LOCATION, LOAD NAME, CABLE SIZE
BCB 01	3	60 A	12.000	[ISIS HV] ION SOURCE INJECTION SYSTEM HIGH VOLTAGE CABINET ISIS HV CABINET ISOLATION TRANSFORMER (4x#6 AWG, N + GND)
BCB 02	3	20 A	4.500	[CCP] CRYOGENIC COMPRESSOR (3x12 AWG, + GND)
BCB 03	1	15 A	1.500	[TURBO PUMP TP31] (2X12 AWG, +G)
BCB 04	1	15 A	1.2	[HYDRAULIC PACK CIRCUIT] 2X12 AWG, +G
BCB 05	1	15 A	1.375	[RF#3] CABINET TERMINAL BLOCK TB#13, 14 & 15 TO POWER THE RF DRIVER (2x12 AWG + GND)
BCB 06	1	15 A	3.000	[TURBO PUMP TP32] (2X12 AWG, +G)
BCB 07	1	15 A	0.600	[O-15 VACUUM PUMP] (2X12 AWG, +G)
BCB 08	1	15 A	1.375	[TRANSFER SYSTEM BLOWER] (2X12 AWG, +G)
BCB 09	1	15 A	1.375	[HOT CELL BLOWER] (2X12 AWG, +G)
BCB 10	3	20 A	4.500	[SPARE]
BCB 11	3	20 A	5.000	[BL QUAD #1] (4X12 AWG, +G)
BCB 12	3	20 A	5.000	[BL QUAD #2] (3X12 AWG, +G)

ELECTRICAL NOTES:

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

~ POWER SPECIFICATIONS ~

TITLE: ELECTRICAL SPECIFICATIONS
TYPE: TR19 ACSI CYCLOTRON

THIS PLAN IS SUBMITTED TO SUGGEST LOCATION OF ACSI EQUIPMENT AND ASSOCIATED APPARATUS, ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. IN PREPARING THIS PLAN, EVERY EFFORT HAS BEEN MADE TO CONFORM DETAILS TO ACTUAL EQUIPMENT EXPECTED TO BE INSTALLED. IT IS NOT TO BE USED FOR ACTUAL CONSTRUCTION PURPOSES, HOWEVER, AND THE COMPANY CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

POWER REQUIREMENTS

THE SUPPLY SHOULD BE COMPLETELY FREE OF NOISE OR TRANSIENTS (ESPECIALLY RF) FROM OTHER ELECTRICALLY OPERATED EQUIPMENT. SURGES, SAGS OR INSTANTANEOUS VARIATIONS IN LINE VOLTAGE FROM EXTERNAL SOURCES MUST NOT EXCEED 5 PERCENT OR HAVE MORE THAN 0.2 SECOND/5 CYCLES DURATION, OR OCCUR MORE THAN TEN TIMES PER HOUR.

CIRCUIT BREAKERS SHOULD HAVE A TIME DELAY OF GREATER THAN ONE CYCLE TO WITHSTAND SWITCH-ON SURGE.

THE FOLLOWING IS SYSTEM POWER REQUIREMENTS:

- o TOTAL INSTALLED POWER 150 kVA
- o NOMINAL VOLTAGE 208 Vac, 60Hz
- o WIRE SYSTEM 3 PHASE, + N & GND
- o VARIATION OF NOMINAL LINE VOLTAGE ± 5%

POWER SUPPLY TEST

IT IS RECOMMENDED THAT THE POWER SUPPLY BE MONITORED TO ASCERTAIN THE AVERAGE LINE VOLTAGE, SURGES, SAGS, IMPULSES AND FREQUENCY OF THE SUPPLY VOLTAGE. THE ANALYSIS OF A SIMULATED LOAD, USING A POWER SYSTEMS ANALYZER CAPABLE OF THE ABOVE SPECIFICATIONS, SHOULD BE CARRIED OUT OVER A CONTINUOUS SEVEN DAY PERIOD PRIOR TO INSTALLATION. THE RESULTS OF THIS ANALYSIS SHOULD BE REVIEWED WITH THE LOCAL SERVICE REPRESENTATIVE TO DETERMINE WHETHER A VOLTAGE/FREQUENCY STABILIZER, POWER LINE PROTECTOR OR FILTERS ARE REQUIRED TO BE INSTALLED BY THE PURCHASER, AS PART OF THE PREINSTALLATION WORK, TO COMPLY WITH THE ABOVE ELECTRICAL REQUIREMENTS.

NOTE: GROUND WIRES ARE TO BE THE SAME SIZE AS PHASE WIRES.

This drawing set is NOT FOR CONSTRUCTION.

REV.	DCN No.	DATE	BY

APPROVED DATE

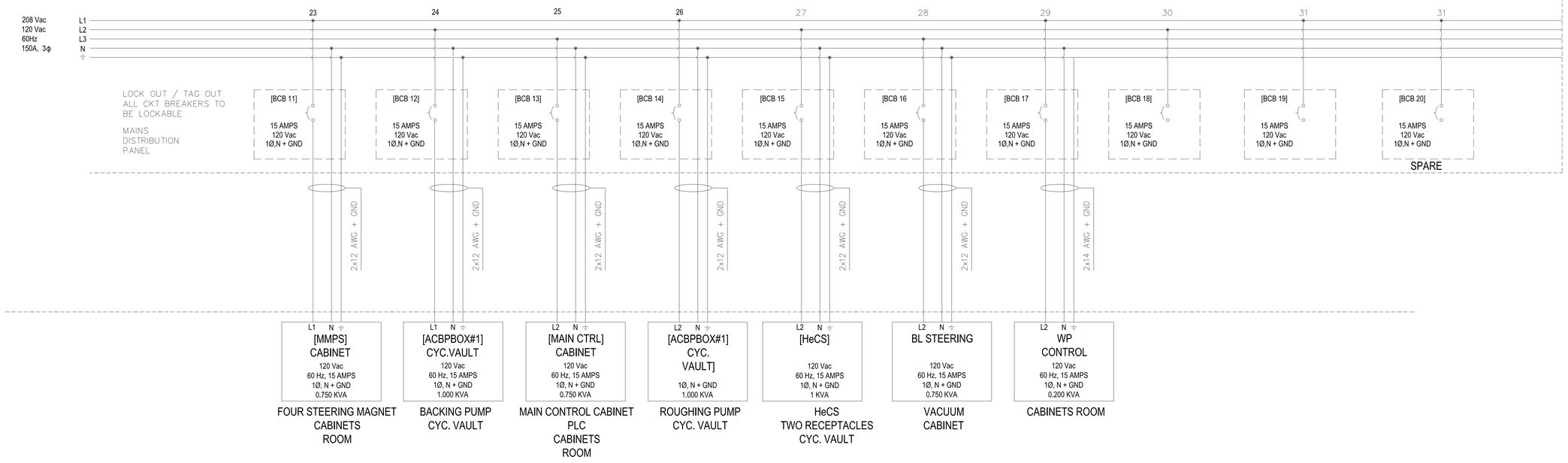
DESIGNED:	I.P.	DATE:	12 MAY 2014
DRAWN:	Z.G.	DATE:	12 MAY 2014
CHECKED:	I.P.	DATE:	12 MAY 2014
APPROVED:	T.T.	DATE:	12 MAY 2014

ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE: GENERIC NORTH AMERICA TR-19 CYCLOTRON ELECTRICAL LOAD SCHEDULE - 2 OF 4

SCALE	TYPE	SIZE	SHEET OF	DWG. No.	REV.
AS SHOWN	BU	A0	11 / 16	BU-00XX	A

BREAKER PANEL No.2 [BP02] LOCATED IN CABINETS ROOM



FOR CONTINUATION REFER TO SHEET 4 OF 4

SCHEDULE OF [BPO2] LOADS
208 Vac / 120 Vac, 60Hz, 150 AMPS

BCBK	POLES	AMPS	KVA	LOCATION, LOAD NAME, CABLE SIZE
BCB 11	1	15 A	0.750	[MMPS] MAIN MAGNET POWER SUPPLY CABINET FOUR STEERING CABINET (2x12 AWG + GND)
BCB 12	1	15 A	[1.000]	[SBOX#1] CYC.VAULT WIRED DIRECTLY TO ELECTRICAL BOX UNDERNEATH THE CYCLOTRON TO POWER BACKING PUMP (2x12 AWG + GND)
BCB 13	1	15 A	0.750	[MAIN CTRL] CABINET CONTROL CABINET TO POWER UPS & THEN PLC (2x12 AWG + GND)
BCB 14	1	15 A	0.750	[SBOX#1] CYC.VAULT WIRED DIRECTLY TO ELECTRICAL BOX [S BOX #1] UNDERNEATH THE CYCLOTRON TO POWER ROUGHING PUMP (2x12 AWG + GND)
BCB 15	1	15 A	1.000	[SBOX#3] [HeCS] TWO RECEPTACLES IN THE VAULT TO POWER HELIUM COOLING SYSTEM (2x12 AWG + GND)
BCB 16	1	15 A	0.750	[BL STEERING PS] (2X12AWG +GRD)
BCB 17	1	15 A	0.200	[WATER PACK CONTROL] (2X14AWG +GRD)
BCB 18	1	15 A	0.800	[SPARE]
BCB 19	1	15 A	1.5	[SPARE]
BCB 19	1	15 A		[SPARE]

ELECTRICAL NOTES:

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

~ POWER SPECIFICATIONS ~

TITLE: ELECTRICAL SPECIFICATIONS
TYPE: TR19 ACSI CYCLOTRON

THIS PLAN IS SUBMITTED TO SUGGEST LOCATION OF ACSI EQUIPMENT AND ASSOCIATED APPARATUS, ELECTRICAL WIRING DETAILS AND ROOM ARRANGEMENTS. IN PREPARING THIS PLAN, EVERY EFFORT HAS BEEN MADE TO CONFORM DETAILS TO ACTUAL EQUIPMENT EXPECTED TO BE INSTALLED. IT IS NOT TO BE USED FOR ACTUAL CONSTRUCTION PURPOSES, HOWEVER, AND THE COMPANY CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGES RESULTING THEREFROM.

POWER REQUIREMENTS

THE SUPPLY SHOULD BE COMPLETELY FREE OF NOISE OR TRANSIENTS (ESPECIALLY RF) FROM OTHER ELECTRICALLY OPERATED EQUIPMENT. SURGES, SAGS OR INSTANTANEOUS VARIATIONS IN LINE VOLTAGE FROM EXTERNAL SOURCES MUST NOT EXCEED 5 PERCENT OR HAVE MORE THAN 0.2 SECOND/5 CYCLES DURATION, OR OCCUR MORE THAN TEN TIMES PER HOUR.

CIRCUIT BREAKERS SHOULD HAVE A TIME DELAY OF GREATER THAN ONE CYCLE TO WITHSTAND SWITCH-ON SURGE.

THE FOLLOWING IS SYSTEM POWER REQUIREMENTS:

- o TOTAL INSTALLED POWER 150 kVA
- o NOMINAL VOLTAGE 208 Vac, 60Hz
- o WIRE SYSTEM 3 PHASE, + N & GND
- o VARIATION OF NOMINAL LINE VOLTAGE ± 5%

POWER SUPPLY TEST

IT IS RECOMMENDED THAT THE POWER SUPPLY BE MONITORED TO ASCERTAIN THE AVERAGE LINE VOLTAGE, SURGES, SAGS, IMPULSES AND FREQUENCY OF THE SUPPLY VOLTAGE. THE ANALYSIS OF A SIMULATED LOAD, USING A POWER SYSTEMS ANALYZER CAPABLE OF THE ABOVE SPECIFICATIONS, SHOULD BE CARRIED OUT OVER A CONTINUOUS SEVEN DAY PERIOD PRIOR TO INSTALLATION. THE RESULTS OF THIS ANALYSIS SHOULD BE REVIEWED WITH THE LOCAL SERVICE REPRESENTATIVE TO DETERMINE WHETHER A VOLTAGE/FREQUENCY STABILIZER, POWER LINE PROTECTOR OR FILTERS ARE REQUIRED TO BE INSTALLED BY THE PURCHASER, AS PART OF THE PREINSTALLATION WORK, TO COMPLY WITH THE ABOVE ELECTRICAL REQUIREMENTS.

NOTE: GROUND WIRES ARE TO BE THE SAME SIZE AS PHASE WIRES.

This drawing set is NOT FOR CONSTRUCTION.

REV.	DCN No.	DATE	BY

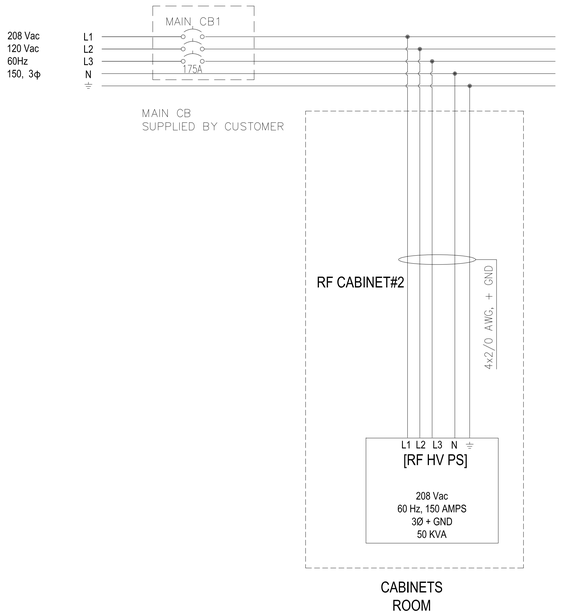
DESIGNED:	I.P.	DATE:	12 MAY 2014
DRAWN:	Z.G.	DATE:	12 MAY 2014
CHECKED:	I.P.	DATE:	12 MAY 2014
APPROVED:	T.T.	DATE:	12 MAY 2014

APPROVED DATE

ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE: GENERIC NORTH AMERICA TR-19 CYCLOTRON ELECTRICAL LOAD SCHEDULE - 3 OF 4

SCALE	TYPE	SIZE	SHEET	OF	DWG. No.	REV.
AS SHOWN	BU	A0	12	16	BU-00XX	A



SCHEDULE OF [BPO3] LOADS
208 Vac / 120 Vac, 60Hz, 150 AMPS

CBK	POLES	AMPS	KVA	LOCATION, LOAD NAME, CABLE SIZE
MAIN CB 1	3	175 A	55	[RF HV PS] RF HV POWER SUPPLY (4X2/0 AWG + GND)

NOTE: [X.XXX] INDICATES THE LOAD USED WHEN THE CYCLOTRON IS NOT OPERATING.

ELECTRICAL NOTES:

1. ALL ELECTRICAL CONDUCTORS, POWER, SIGNAL AND GROUND, MUST BE RUN IN CONDUIT OR DUCT SYSTEM. ALL WIRES SPECIFIED SHALL BE STRANDED, FLEXIBLE, THERMO-PLASTIC, COLOUR CODED, COPPER ONLY, CUT 10 FOOT LONG AT OUTLET BOXES, DUCT TERMINATION POINTS OR STUBBED CONDUIT ENDS, UNLESS OTHERWISE SPECIFIED. CONTRACTOR SHALL RING OUT AND TAG ALL WIRES AT BOTH ENDS. WIRE RUNS MUST BE CONTINUOUS COPPER AND FREE FROM SPLICES.
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~ POWER SPECIFICATIONS ~

TITLE: ELECTRICAL SPECIFICATIONS
TYPE: TR19 ACSI CYCLOTRON

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POWER REQUIREMENTS

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CIRCUIT BREAKERS SHOULD HAVE A TIME DELAY OF GREATER THAN ONE CYCLE TO WITHSTAND SWITCH-ON SURGE.

THE FOLLOWING IS SYSTEM POWER REQUIREMENTS:

- o TOTAL INSTALLED POWER 150 kVA
- o NOMINAL VOLTAGE 208 Vac, 60Hz
- o WIRE SYSTEM 3 PHASE, + N & GND
- o VARIATION OF NOMINAL LINE VOLTAGE ± 5%

POWER SUPPLY TEST

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NOTE: GROUND WIRES ARE TO BE THE SAME SIZE AS PHASE WIRES.

REV.	DCN No.	DATE	BY

APPROVED DATE

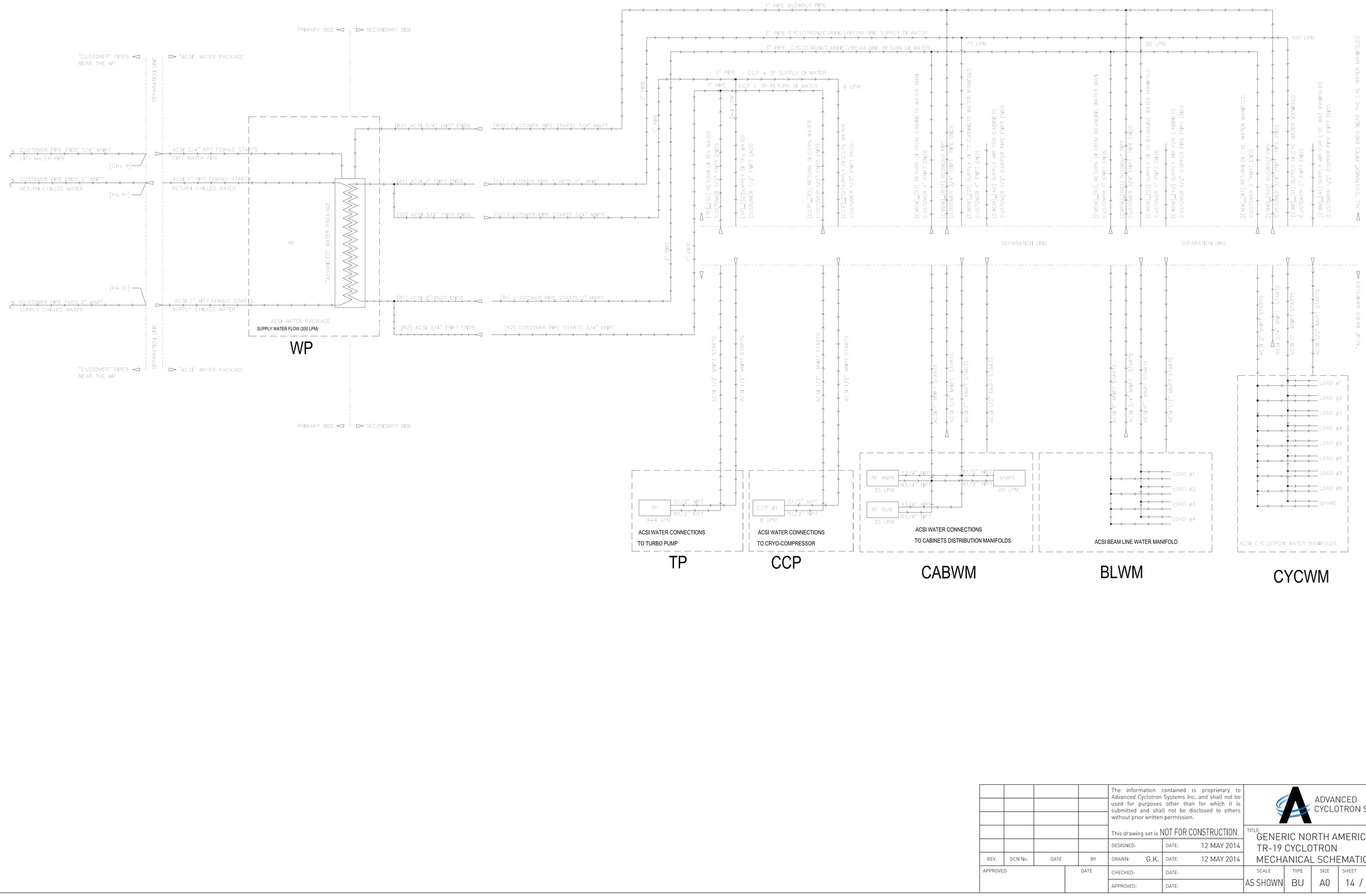
This drawing set is NOT FOR CONSTRUCTION.

DESIGNED:	I.P.	DATE:	12 MAY 2014
DRAWN:	Z.G.	DATE:	12 MAY 2014
CHECKED:	I.P.	DATE:	12 MAY 2014
APPROVED:	T.T.	DATE:	12 MAY 2014

ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE: GENERIC NORTH AMERICA
TR-19 CYCLOTRON
ELECTRICAL LOAD SCHEDULE - 4 OF 4

SCALE	TYPE	SIZE	SHEET OF	DWG. No.	REV.
AS SHOWN	BU	A0	13 / 16	BU-00XX	A



REV.	DCN No.	DATE	BY

This drawing set is NOT FOR CONSTRUCTION.

DESIGNED:	DATE:	12 MAY 2014
DRAWN: G.K.	DATE:	12 MAY 2014
CHECKED:	DATE:	
APPROVED:	DATE:	

APPROVED DATE

ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE: GENERIC NORTH AMERICA TR-19 CYCLOTRON MECHANICAL SCHEMATIC

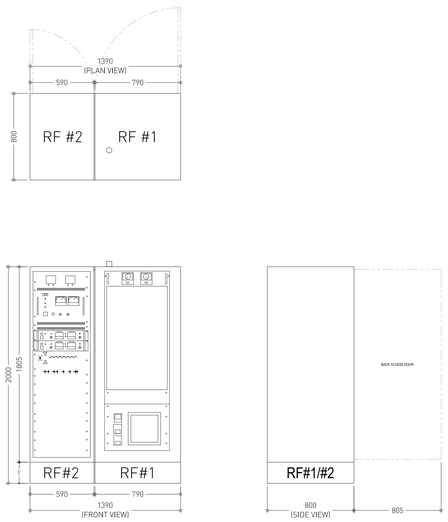
SCALE	TYPE	SIZE	SHEET OF	DWG. No.	REV.
AS SHOWN	BU	A0	14 / 16	BU-00XX	A

RADIO FREQUENCY CABINETS #1 & #2
[RF#1] & [RF#2]

APPROX. WEIGHT: 450kg

SCALE 1:20

NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm

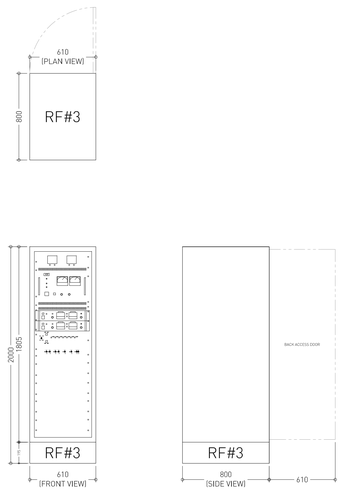


RADIO FREQUENCY CABINET #3
[RF#3]

APPROX. WEIGHT: 350kg

SCALE 1:20

NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm

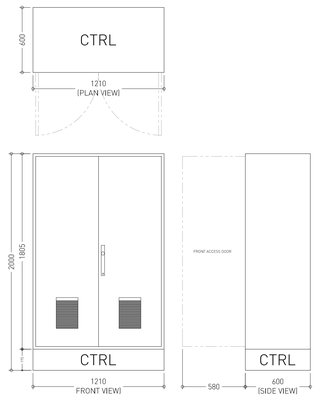


CONTROL CABINET
[CTRL]

APPROX. WEIGHT: 100kg

SCALE 1:20

NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm

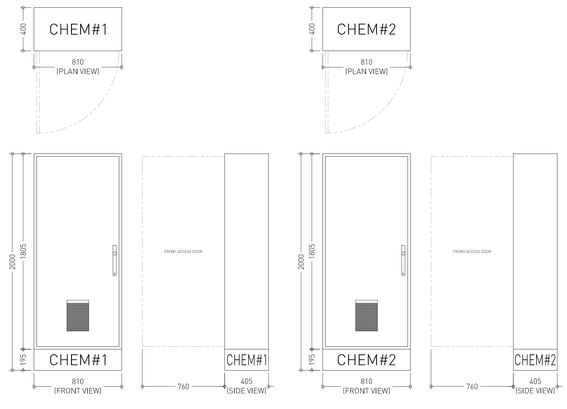


CHEMISTRY CONTROL CABINETS #1 & #2
[CHEM#1] & [CHEM#2]

APPROX. WEIGHT: 350kg

SCALE 1:20

NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm

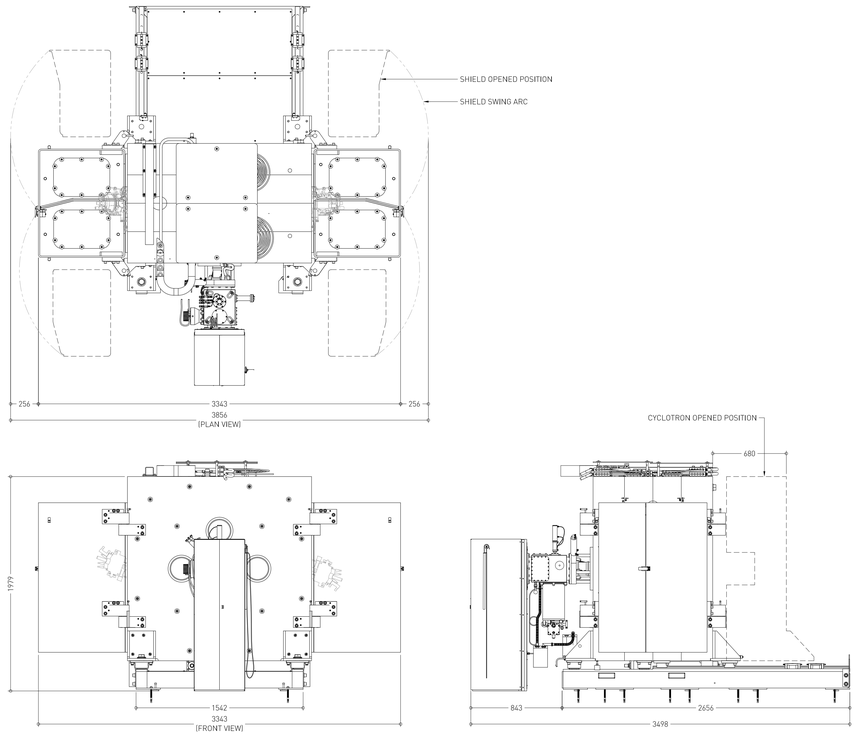


TR-19 CYCLOTRON
[CYC]

APPROX. WEIGHT: 25,000kg

SCALE 1:20

NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm

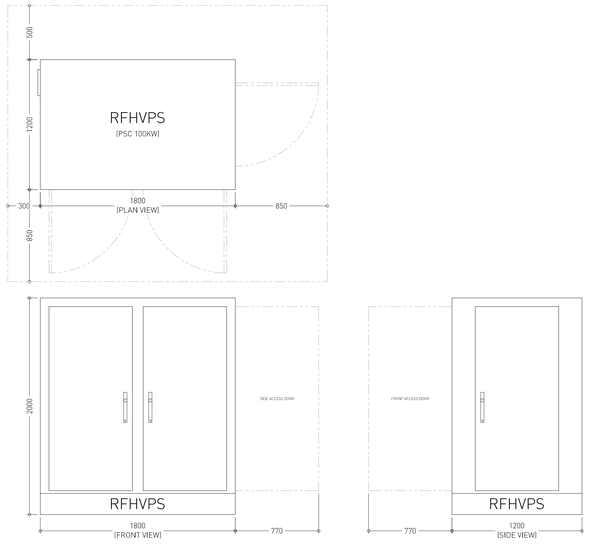


RADIO FREQUENCY HIGH VOLTAGE POWER SUPPLY
[RFHVPS]

APPROX. WEIGHT: 1,800kg

SCALE 1:20

NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm



REV.	DCN No.	DATE	BY

DESIGNED:	[p.m.]	DATE: 12 MAY 2014
DRAWN:	DSu	DATE: 12 MAY 2014
CHECKED:	[p.m.]	DATE: 12 MAY 2014
APPROVED:	[p.m.]	DATE: 12 MAY 2014

APPROVED DATE

ADVANCED CYCLOTRON SYSTEMS, INC.

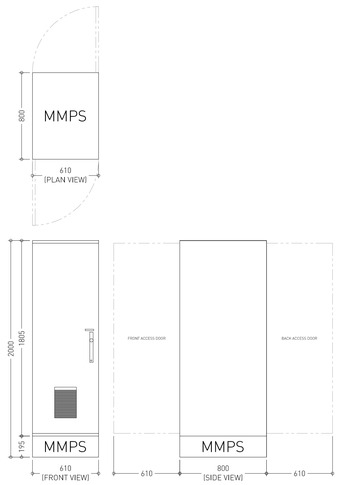
TITLE:
GENERIC NORTH AMERICA
TR-19 CYCLOTRON
EQUIPMENT DETAILS

SCALE	TYPE	SIZE	SHEET OF	DWG. No.	REV.
AS SHOWN	BU	A0	15 / 16	BU-00xx	A

MAIN MAGNET POWER SUPPLY [MMPS]

APPROX. WEIGHT: 300kg — SCALE 1:20

NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm



BEAMLINE QUADRUPOLE POWER SUPPLY [BQPS]

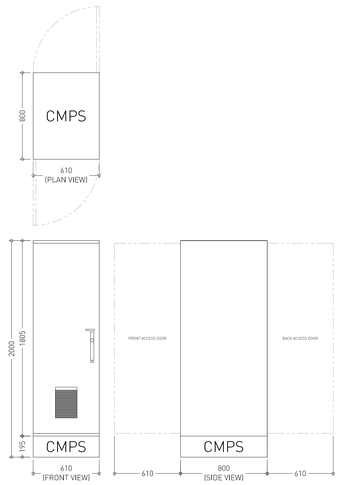
APPROX. WEIGHT: 165kg — SCALE 1:20

NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm

COMBINATION MAGNET POWER SUPPLY [CMPS]

APPROX. WEIGHT: 165kg — SCALE 1:20

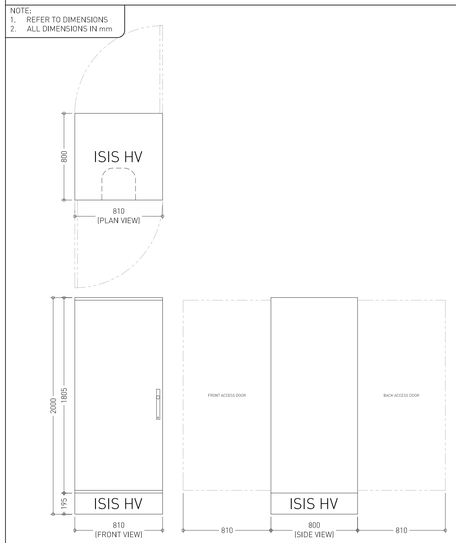
NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm



ION SOURCE INJECTION SUPPLY HIGH VOLTAGE [ISIS HV]

APPROX. WEIGHT: 240kg — SCALE 1:20

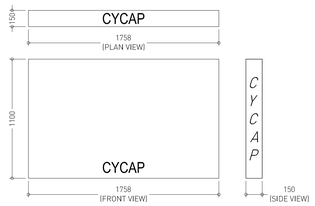
NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm



CYCLOTRON AIR PANEL [CYCAP]

APPROX. WEIGHT: 75kg — SCALE 1:20

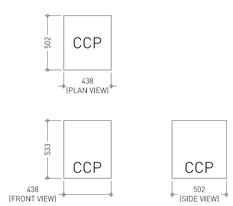
NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm



CRYOGENIC COMPRESSOR [CCP]

APPROX. WEIGHT: 118kg — SCALE 1:20

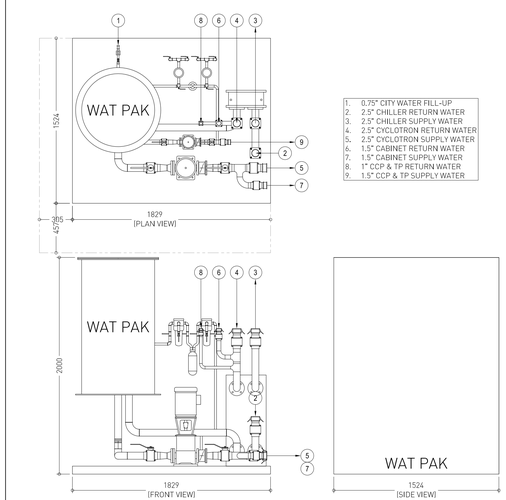
NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm



WATER PACKAGE [WAT PAK]

APPROX. WEIGHT: 1,100kg — SCALE 1:20

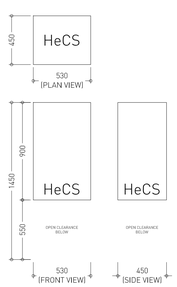
NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm



HELIUM COOLING SYSTEM [HeCS]

APPROX. WEIGHT: 73kg — SCALE 1:20

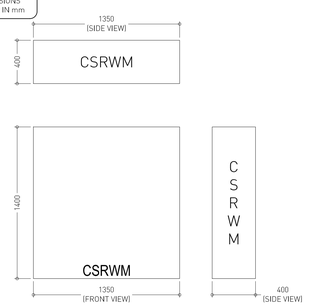
NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm



CYCLOTRON SUPPLY & RETURN WATER MANIFOLD [CSRWM]

APPROX. WEIGHT: 100kg — SCALE 1:20

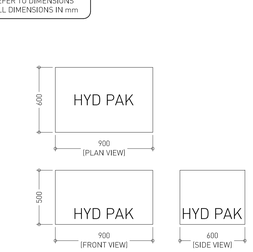
NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm



HYDRAULIC PACKAGE [HYD PAK]

APPROX. WEIGHT: 100kg — SCALE 1:20

NOTE:
1. REFER TO DIMENSIONS
2. ALL DIMENSIONS IN mm



This drawing set is NOT FOR CONSTRUCTION.

REV.	DCN No.	DATE	BY

APPROVED — DATE

DESIGNED: [p.m.] DATE: 12 MAY 2014
DRAWN: DSu DATE: 12 MAY 2014
CHECKED: [p.m.] DATE: 12 MAY 2014
APPROVED: [p.m.] DATE: 12 MAY 2014

ADVANCED CYCLOTRON SYSTEMS, INC.

TITLE:
GENERIC NORTH AMERICA
TR-19 CYCLOTRON
EQUIPMENT DETAILS

SCALE	TYPE	SIZE	SHEET	OF	DWG. No.	REV.
AS SHOWN	BU	A0	16	16	BU-00xx	A