

MECHANICAL SPECIFICATIONS (DIVISION 15)

1.0 GENERAL INSTRUCTIONS - MECHANICAL

- 1.01 GENERAL**
- ALL MECHANICAL WORK SHALL BE AS NOTED ON PLANS, INCLUDING THE FOLLOWING GENERAL INSTRUCTIONS WHICH ARE DETAILED DRAWINGS, CORRESPONDENCE AND TO ANY OTHER DOCUMENT THAT IS SUPPLIED OR WILL BE SUPPLIED BY THE ENGINEER.
 - ONLY THE ENGINEER WHO PREPARED THE PLANS CAN CORRECTLY INTERPRET THE INTENT ON THE PLANS AND DOCUMENTS AND ALL DOCUMENTS AND PLANS ARE THE SOLE PROPERTY OF THE ENGINEER. FURTHER MORE, THESE PLANS AND DOCUMENTS (NOT BE USED, IN PART OR IN WHOLE FOR ANY OTHER PROJECT OTHER THAN THE ONE IT WAS INTENDED FOR.
 - 1.01 DOCUMENTS BIDDING**
 - NOTWITHSTANDING ARTICLE 1.01 AND DURING THE BID PROCESS, THE SUB-CONTRACTOR SHALL ANTICIPATE ALL WORK TO BE COMPLETED AS PER PLANS AND HE SHOULD ADVISE THE ENGINEER OF ANY/ALL ERRORS, OMISSIONS, MISSING INFORMATION OR ANY OTHER DISCREPANCY BETWEEN THE DOCUMENTS AND PLANS AND/OR NON-COMPLIANCE IN THE INTERPRETATION OF THE DRAWINGS.
 - ALL THE ABOVE SHALL BE NOTED IN WRITING TO THE ENGINEER DURING THE BID PROCESS. FAILURE TO COMPLY SHALL RESULT IN ANY/ALL REVISIONS TO BECOME THE RESPONSIBILITY OF THE SUB-CONTRACTOR.
 - 1.04 SCOPE OF WORK**
 - SCOPE OF WORK INCLUDES:
 - SUPPLY, INSTALLATION AND CONNECTION OF ALL THAT IS SHOWN ON DRAWINGS OR MENTIONED IN THE SPECIFICATIONS WITH ALL REQUIRED ACCESSORIES, EVEN THOSE NOT ILLUSTRATED ON PLANS AND SPECIFICATIONS BUT REQUIRED FOR GOOD OPERATION.
 - THE OBLIGATION IS:
 - PERFORM START-UP OF ALL SYSTEMS ACCORDING TO ESTABLISHED PROCEDURES AND GOOD ENGINEERING PRACTICE AND IN CLOSE COLLABORATION WITH ALL OTHER TRADES INVOLVED.
 - PERFORM MAINTENANCE AND REPAIRS TO ALL MECHANICAL EQUIPMENT, INCLUDING REPAIRS TO EQUIPMENT NECESSARY FOR TOTAL COMPLETION AS INDICATED.
 - DRAWINGS AND IN THE PRESENT GENERAL INSTRUCTIONS.
 - PROTECT ALL WORK AGAINST WEATHER, FIRE, THEFT AND VANDALISM THROUGHOUT THE WHOLE DURATION OF THE PROJECT.
 - COMPLETE ALL ADDITIONAL WORK THE ENGINEER HAS REQUESTED IN WRITING WITH THE CONSENT FROM THE OWNER SHALL BE DONE. ANY/ALL WORK OF ADDITIONAL WORK COMPLETED WITHOUT WRITTEN CONSENT FROM THE ENGINEER.
 - AT THE SUB-CONTRACTORS COST, HE SHALL PROTECT, BRACE, SUPPORT, DIVERS AND RESTORE IN GOOD ORDER, TO THE SATISFACTION OF THE ENGINEER, ALL EQUIPMENT REMAINING TO:
 - WATER, GAS, SEWER AND DRAIN PIPING, ETC.;
 - MECHANICAL EQUIPMENTS AND SYSTEMS AND/OR ARCHITECTURAL ITEMS.
 - WALLS FLOORS, CEILINGS AND OTHER STRUCTURAL AND/OR ARCHITECTURAL ITEMS.
 - WITH RESPECT TO CLEARANCES, DAMAGE AND THE MOVING OF THE ABOVE ITEMS, IN THE PROCESS OF COMPLETING HIS WORK, ALL DAMAGE TO EXISTING SYSTEMS AND EQUIPMENT SHALL BE MADE GOOD AND RETURNED TO THEIR ORIGINAL LOCATION, TO THE SATISFACTION OF THE ENGINEER AND AT NO ADDITIONAL COST TO THE OWNER.
 - THE MECHANICAL DRAWINGS DO NOT INDICATE ALL ARCHITECTURAL AND STRUCTURAL DETAILS. EXACT INFORMATION SHALL BE OBTAINED FIRST FROM SITE AND SECOND FROM ARCHITECTURAL AND STRUCTURAL DRAWINGS WHICH SHALL BE AS SHOWN ON CORRESPONDENT DRAWINGS. THE DUCT INSULATION SHALL CONFORM TO THE FOLLOWING:
 - TO BE RAIN PARALLEL TO THE BUILDING ENVELOPE WHEN EXPOSED;
 - NO CUTTING OR BORING THROUGH STRUCTURAL ELEMENTS WITHOUT WRITTEN PERMISSION;
 - SHALL BE INSTALLED IN A MANNER TO FACILITATE FUTURE EQUIPMENT MAINTENANCE;
 - TO RELOCATE, AT NO EXTRA COST WITHIN 4.6M (15 FEET) OF INDICATED LOCATION;
 - TO RELOCATE, AT NO EXTRA COST WITHIN 1.5M (5 FEET) OF INDICATED LOCATION;
 - TO RELOCATE, AT NO EXTRA COST WHEN NOT IN ACCORDANCE WITH THE PRECEDING.
 - IF THE INSTALLATION OR EQUIPMENT CONNECTION IS DIFFERENT FROM THE ONE SHOWN ON THE DRAWINGS, THE ELECTRICAL CONDITIONS SHALL BE MODIFIED ACCORDINGLY AND ACCORDING TO THE STANDARDS OUTLINED ABOVE.
 - UNLESS OTHERWISE SPECIFIED, ALL DUCTS AND PIPES SHALL BE CONCEALED WITHIN WALL CAVITIES, IN CEILING SPACES AND/OR OTHER SUCH ARCHITECTURAL ENCLOSURES, EVEN THOUGH THEY MAY BE DRAWN SURFACE MOUNTED WHEN IN DOOR, VERIFY AND CONFIRM WITH THE ENGINEER FOR PRECISION.
 - ALL WORKIFICATIONS TO MATERIALS, EQUIPMENT OR FIXTURES AND ALL DEVIATIONS TO THE CONTRACT RANS AND OTHER DOCUMENTS SHALL BE APPROVED BY THE ENGINEER. THE SUB-CONTRACTOR WILL PREPARE AND SUBMIT TO THE ENGINEER FOR ISSUANCE AS AN "AS BUILT" DRAWING.
- 1.02 QUALITIES**
- THE ENTIRE WORK SHALL BE FREE OF MANUFACTURING, MATERIAL AND INSTALLATION DEFECTS. ALL MATERIAL, EQUIPMENT AND FIXTURES SHALL BE NEW UNLESS OTHERWISE SPECIFIED.
 - IF DURING THE WARRANTY PERIOD IT IS PROVED THAT SUCH DEFECTS EXIST, THE SUB-CONTRACTOR SHALL REPAIR OR REPLACE THE DEFECTIVE EQUIPMENT OR WORK WITHOUT DELAY. THE SUB-CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF THE DEFECTIVE EQUIPMENT OR WORK. THE REPAIR OR REPLACEMENT OF THE WORK SHALL BE COMPLETED AT THE SUB-CONTRACTOR'S COST.
 - A WRITTEN ONE (1) YEAR WARRANTY SHALL BE SUPPLIED BY EACH SUB-CONTRACTOR FOR ALL THE EQUIPMENT AND APPROVAL DATE OF THE WORK BY THE ENGINEER.
- 1.03 SHIP DRAWINGS**
- BEFORE OPERATING MATERIAL AND EQUIPMENT, THE SUB-CONTRACTOR SHALL SUBMIT TO THE ENGINEER ONE (1) COPY (PAPER OR PDF BY EMAIL) OF ALL SHIP DRAWINGS AND SAMPLES THESE DRAWINGS SHALL BE REVIEWED AND NOTED BY THE PROJECT ENGINEER AND BE RETURNED BY EMAIL IN COLOUR PDF FORMAT.
 - THE SUB-CONTRACTOR SHALL, WHEN INDICATED AND BEFORE OPERATING, SUPPLY MATERIAL SAMPLES TO BE USED FOR THE ENGINEER'S APPROVAL.
 - THE STUDY AND THE APPROVAL OF THE DRAWINGS AND SAMPLES BY THE ENGINEER IS APPLICABLE ONLY TO THE GENERAL LAYOUT. ERRORS WILL BE NOTED WHEN SEEN, BUT SHIP DRAWINGS APPROVAL WILL NOT FREE THE DOCUMENTS FROM HIS RESPONSIBILITY TO COMPLETE THE WORK IN ACCORDANCE WITH THE CONTRACTUAL DOCUMENTS.
 - SHIP DRAWINGS SHALL SHOW MATERIAL CHARACTERISTICS, MANUFACTURING AND INSTALLATION DETAILS, INCLUDING ANY PARTICULAR USE OR STANDARDS TO BE FOLLOWED.
 - THE FOLLOWING SHIP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER. THIS LIST IS NEITHER LIMITED NOR COMPLETE. ANY OTHER SHIP DRAWING WHICH MAY BE JUDGED TO BE RELEVANT SHALL BE SUBMITTED TO THE ENGINEER BY THE CONTRACTORS CONCERNED.
- VENTILATION :**
- VAV BOXES;
 - CONTROL EQUIPMENT AND WIRING DIAGRAMS;
 - INSTALLATION;
 - ETC.
- 1.07 EXECUTION DRAWINGS**
- BEFORE PREPARING, EACH SUB-CONTRACTOR SHALL, BEFORE THE BEGINNING HIS WORKS, SUBMIT AT LEAST THREE (3) COPIES OF HIS EXECUTION DRAWINGS FOR REVIEW AND APPROVAL TO THE PROJECT ENGINEER. THESE SHALL INCLUDE INSTALLATION AND LAYOUT OF DUCTS AND /OR PIPES VIS-A-VIS ARCHITECTURAL AND STRUCTURAL LAYOUTS. ANY AND ALL CHANGES OR MODIFICATIONS TO THE ENGINEER'S DRAWINGS THAT HAVE NOT BEEN PRE-APPROVED BY THE ENGINEER SHALL BE CONSIDERED TO THE ENGINEER'S SATISFACTION AND THIS WITH NO ADDITIONAL CHARGES.
 - THE SUB-CONTRACTOR SHALL COORDINATE HIS DUCTS AND/OR PIPES WITH ALL OTHER SUBTRADES. NO ADDITION CHARGES WILL BE APPROVED FOR THE LACK OF COORDINATION BETWEEN SUBTRADES.
- 1.08 OPERATION AND MAINTENANCE**
- THE SUB CONTRACTORS ARE OBLIGED TO:
- START UP ALL SYSTEMS AND VERIFY THE OPERATING CONDITIONS AND PERFORMANCE CHARACTERISTICS AS SPECIFIED ON PLANS AND SPECS.
 - VERIFY EACH SYSTEM BY SIMULATING ALL CONDITIONS AND PREPARE A REPORT INDICATING PERFORMANCE ACCORDING TO SPECS, PLANS, RECOMMENDATIONS AND MANUFACTURERS INSTRUCTIONS.
 - SUBMIT TWO (2) INVOICES CONTAINING SHIP DRAWINGS, TEST RESULTS AND INSTRUCTION MANUALS FOR USE AND MAINTENANCE.
- 1.09 LAWS, CODES, LICENSES AND STANDARDS**
- IT IS FORGOTTEN TO HIRE ALL WORK PRIOR TO INSPECTION BY THE ENGINEER AND/OR GOVERNING AUTHORITIES.
 - OBTAIN COMPLIANCE CERTIFICATES FROM GOVERNING AUTHORITIES (LABOUR MINISTRY, MUNICIPAL FIRE DEPT, MUNICIPAL PLUMBING AUTHORITIES AND OTHERS).
 - FOLLOW APPLICABLE CODES & STANDARDS (THE MGC, NRC, NRC, LABOUR MINISTRY, MUNICIPAL SERVICES ENVIRONMENTAL PROTECTION AND ANY OTHER CODE AND/OR STANDARD WHICH MAY BE RELEVANT TO THE PROJECT).
 - IN ADDITION, ALL FEES FOR TEMPORARY CONNECTIONS TO PUBLIC SERVICES (IE: WATER MAIN, SEWER, ETC) SHALL BE AT THE EXPENSE OF THE SPECIFIC CONTRACTOR.

1.10 WORK DISTRIBUTION

- EXCEPT WHERE OTHERWISE SPECIFIED IN THE MECHANICAL AND ELECTRICAL PLANS AND SPECIFICATIONS, THE FOLLOWING WORKS SHALL BE DISTRIBUTED AS INDICATED :
 - REVISIONS: EVERY SUB-CONTRACTOR SHALL ENSURE PROTECTION AGAINST BREAKING, THEFT, FIRE, VANDALISM OF ALL HIS MATERIALS AND MATERIALS UNDER FINAL ACCEPTANCE BEFORE THE OWNER AND SHALL ENSURE A SECURE INSTALLATION TO THE BEST OF HIS ABILITY. THE SUB-CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF HIS WORK.
 - REPAIRS: REPAIRS AND REVISIONS BY OTHERS: SUB-CONTRACTOR CONSENT, EXCEPT IN THE CASE OF LARGE OPENINGS AND REPAIRS AND REVISIONS. REPAIRS SHALL BE SUPPLIED AND INSTALLED BY EACH SUB-CONTRACTOR FOR HIS OWN EQUIPMENT AND SHALL BE MAINTAINED WHERE REQUIRED TO ELIMINATE UNDESIRABLE NOISE.
 - EXHAUSTION OF AIR: EXHAUSTION AND REPAIRS SHALL BE UNDER THE RESPONSIBILITY OF THE GENERAL CONTRACTOR, EXCEPT FOR REPAIRS OF 50 CM (2") OR LESS DIA. SHALL BE EACH SUB-CONTRACTOR'S RESPONSIBILITY.
 - EXHAUSTION OF STEEL: SHALL BE UNDER THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
 - CONNECTIONS: EACH RESPECTIVE SUB- CONTRACTOR SHALL CONNECT ALL EQUIPMENT AND FIXTURES INDICATED ON DRAWINGS, INCLUDING THOSE SUPPLIED BY OTHERS.
 - ACCESS DOORS: WHEN EQUIPMENT INSTALLED BY A SUB CONTRACTOR REQUIRES AN ADJUSTMENT, MAINTENANCE OR REPAIR, ACCESS DOORS SHALL BE INSTALLED BY THE SUB CONTRACTOR. WHEN ACCESS DOORS ARE NOT INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS, THE SUB CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION IS MADE BY THE GENERAL CONTRACTOR.
 - IDENTIFICATION: ALL UNITS AND MECHANICAL EQUIPMENT SHALL BE IDENTIFIED BY A BLACK LAMINATED PLATE WITH WHITE LETTERING AND PASTERED TO THE UNIT AND/OR EQUIPMENT WITH SELF TAPPING SCREWS.
 - THE FOLLOWING WORK SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR:
 - BRACING AND COATING PRE-PAINTED (IN SHOP) AND SET-TOUCHES;
 - STURDINESS & SEALING OF CURBS AND OPENINGS ON ROOF, WALLS AND FLOORS;
 - DRILLING OF HOLES GREATER THAN 2" (50MM) DIA. DUCT WORK;
 - CONCRETE & MASONRY WORK;
 - REPAIRS AND ADJUSTMENTS FOLLOWING DRILLING BY SUB CONTRACTORS;
 - REPAIRS AND ADJUSTMENTS FOLLOWING PIPING THIRD WALLS AND FIRE STOP FLOORS;
 - THE LEVELLING OF ALL NEW & EXISTING SURFACES;
 - SET WORK DISTRIBUTION.
- 1.11 MOTORS**
- UNLESS OTHERWISE SPECIFIED, MOTORS SHALL BE DHP-PROOF TYPE "X" WITH UPRIME SELF LUBRICATED BALL BEARINGS.
- 1.12 EQUIPMENT DRAWINGS**
- ALL EQUIPMENT REQUIRING A FORM OF BRANING (IE: OVERFLOW BRANING, PIPING, SAFETY VALVES, SHUT PANS, HOT WATER HEATERS, LOUVERS, SUPPLY AND EXHAUST FLEXIBLES OF COMPRESSORS AND OTHERS) SHALL BE CONNECTED TO THE NEAREST DRAIN, FLOOR DRAIN OR CERAMIC DRAIN VIA A MINIMUM 1" (25MM) COPPER PIPE.
 - THE CONNECTION ON THE EQUIPMENT SHALL BE UNDER THE RESPONSIBILITY OF THE CONTRACTOR SUPPLYING THE EQUIPMENT, BUT THE BRANING PIPE SHALL BE SUPPLIED AND INSTALLED BY THE PLUMBING CONTRACTOR.
- 1.13 DIELECTRIC JOINING AND ELECTRICAL CONDUIT**
- UNVER ANY OVERSIGHTS SHALL COPPER PIPING COME INTO CONTACT WITH FERROUS AND/OR GALVANIZED METALS.
 - ELECTRIC CURRENT BETWEEN TWO DIFFERENT METALS SHALL BE ELIMINATED BY THE USE OF INSULATED SLEEVES.
 - CLAMP SHALL BE OF THE PREPARED TYPE, CONSISTING OF INSULATED CONTACT SURFACES AND MOUNTING STUDS SECURED BY THE USE OF INSULATED BOLTS.
 - SUPPORT CLAMPS & UNIONS SHALL NOT BE INSULATED IN ORDER TO FACILITATE FUTURE INSPECTIONS.
 - THE DIELECTRIC MATERIAL SHALL RESIST TEMPERATURES AND PRESSURES OF THE SYSTEM INSTALLED.
 - IN THE EVENT A FERROUS TIE MATERIAL AND/OR EQUIPMENT IS TO BE INSTALLED ON A COPPER SYSTEM, A BONDING WIRE SHALL BE INSTALLED, AND EXTENDED ACROSS THIS MATERIAL/EQUIPMENT TO PROVIDE A CONTINUOUS DIELECTRIC BRIDGE & CONNECT THIS BOND.
- 1.14 BORDERS & LICENSES**
- AT NO ADDITIONAL EXPENSE TO THE CLIENT, THE CONTRACTOR SHALL MAKE/CHANGE/ADDIFY ALL EQUIPMENT WHEN REQUESTED BY A COMPETENT GOVERNING BODY (INSPECTOR ETC).
 - THE CONTRACTOR SHALL PAY ALL ROYALTIES FOR THE USE OF PATENTED PRODUCTS. HE SHALL ALSO PROTECT THE OWNER FROM ANY/ALL CLAIMS WITH RESPECT TO THE USE OF PATENTED PRODUCTS WHICH MAY BE RELATED TO THE PATENT RIGHTS OF SUCH A PRODUCT AT THE TIME OF CONTRACT SIGNING.
- 1.15 REGULATION & EQUIVALENCE**
- EQUIPMENT, ACCESSORIES AND CONDITIONS ARE SHOWN TO BE APPROXIMATE ON PLANS, THE FINAL LOCATION OF ALL EQUIPMENT, ACCESSORIES AND CONDITIONS SHALL BE DETERMINED ON-SITE, AND DEPENDENT TO ON-SITE CONDITIONS AND IN COORDINATION WITH OTHER TRADES.
 - UNLESS OTHERWISE NOTED, ALL MECHANICAL EQUIPMENT TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROMPTLY REMOVED FROM THE CONSTRUCTION SITE AT THE CONTRACTOR'S EXPENSE AFTER APPROVAL OF THE ENGINEER.
 - AT ANY STAGE DURING THE PROJECT, IF SPECIFIC EQUIPMENT AND/OR ACCESSORIES (NEW OR EXISTING) OBTAIN AN EQUIPMENT OR SYSTEM, THE CONTRACTOR SHALL LOCATE OR RELOCATE THIS EQUIPMENT AT AN APPROPRIATE LOCATION AND CONNECT IT ACCORDING TO THE RESPECTED STANDARDS.
 - ALL EQUIPMENT TO BE RELOCATED AND/OR REMOVED SHALL BE CLEANED AND/OR REPAIRED (IF REQUIRED) PRIOR TO FINAL INSTALLATION.
 - THE CONTRACTOR SHALL TAKE ALL THE NECESSARY STEPS TO ENSURE THAT NO DAMAGE IS CAUSED TO EXISTING EQUIPMENT/AND/OR DECOR, ANY/ALL EQUIPMENT/DECOR JUDGED TO BE SOLID AND OR DAMAGED BY THE ENGINEER OR OWNER SHALL BE MADE GOOD AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE OWNER AND/OR SURVEILLERS & MANUFACTURERS. THE CONTRACTOR SHALL COORDINATE & REPAIR WITH OTHER TRADES.
 - IN ORDER TO ACHIEVE MAXIMUM RESULTS, THE CONTRACTOR SHALL COORDINATE & REPAIR WITH OTHER TRADES. THE CONTRACTOR SHALL INFORM THE ENGINEER OF ANY/ALL DELAYS IN DELIVERY OF SPECIFIED PRODUCTS/MATERIALS, IN THE EVENT A PRODUCT/EQUIPMENT MAY NOT BE AVAILABLE IN TIME. THE CONTRACTOR SHALL SUBMIT AN EQUIPMENT AND/OR MATERIAL/EQUIPMENT LIST TO THE ENGINEER AND THE ENGINEER'S APPROVAL OF THE SUBSTITUTED EQUIPMENT/MATERIAL AND THE OWNER. NO ALTERNATIVE METHOD OF INSTALLATION OR DESIGN PARAMETERS SHALL BE ACCEPTED WITHOUT A CREDIT BEING DULY APPROVED BY THE ENGINEER AND THE OWNER.

1.16 DOCUMENTS TO SUBMIT

- BEFORE PREPARING INSPECTIONS, THE SUB-CONTRACTOR SHALL SUBMIT THE FOLLOWING DOCUMENTS PERTAINING TO HIS SCOPE OF WORK:
 - WARRANTY, TEST AND RESULTS FOR DUCTS;
 - BRACING REPORT AND OPERATION CONDITIONS (TEMPERATURES) REFER TO SECTION 3.06;
 - MANUAL COMPLETE WITH APPROVED SHIP DRAWINGS MANUAL;
 - CONFORMITY AND INSPECTION CERTIFICATES WITH SEISMIC PROTECTION DEVICES, SEALED AND SIGNED BY A SPECIALIST UNDER THE RESPONSIBILITY OF THE CONTRACTOR;
 - AS-BUILT DRAWINGS.
 - NOTE: ALL DOCUMENTS MENTIONED ABOVE MUST BE SIGNED BY THE CONCERNED PARTY WITH THE REQUIRED COMPETENCES.
- 1.17 INTERPRETATION OF SERVICES**
- THE CONTRACTOR SHALL INFORM THE OWNER OF ANY/ALL SERVICE INTERRUPTIONS AT LEAST 24 HOURS IN ADVANCE. IF A INTERRUPTION OCCURS DURING EVENING AND/OR NIGHT HOURS, THE CONTRACTOR SHALL SCHEDULE THE INTERRUPTION DURING EVENING AND/OR NIGHT HOURS.
 - ALL WORK TO BE PERFORMED IN OCCUPIED WORK SPACES SHALL BE PERFORMED IN A MANNER SO AS TO NOT DISTURB THESE WORKING IN THAT AREA. THE CONTRACTOR SHALL VERIFY WITH THE OWNER IF HE MAY WORK IN A SPECIFIC OCCUPIED AREA DURING NORMAL WORKING HOURS. IF AN ARRANGEMENT CANNOT BE AGREED UPON, THE CONTRACTOR OCCUPIED SPACES SHALL BE MADE CLEAN FREE FROM DEBRIS, MATERIAL & TOOLS. FAILURE TO COMPLY TO THE ABOVE SHALL RESULT IN THE CONTRACTOR BEING BILLED FOR DELAYS CAUSED TO THE OWNER.
- 1.18 MISCELLANEOUS WORK**
- THE SUB-CONTRACTORS SHALL CORRECT-UP ALL WORK WORK (NOT SHOWN) ON PLANS WHICH IS REQUIRED FOR COMPLETE SYSTEM OPERATION. THIS WORK MAY INCLUDE REQUESTS FROM THE ENGINEER OF TASKS WHICH ARE NORMALLY PART OF HIS OBLIGATIONS DURING THE BID PROCESS.

1.19 GENERAL DEMOLITION NOTES

- INSPECT AND VERIFY WITH THE OWNER'S ENGINEER OR PROJECT MANAGER THE WORK THAT MUST BE REMOVED, RELOCATED AND/OR THAT WILL REMAIN IN PLACE. NO CLAIMS WILL BE AWARDED FOR WORK EXCEEDED BY MISTAKE. ALSO, SMO AND/OR SHALL HAVE TO BE REMOVED TO THE OWNER'S SATISFACTION AT THE AT FAULT CONTRACTOR'S EXPENSE.
- UNLESS OTHERWISE SPECIFIED, REMOVE ALL MECHANICAL OR OTHER EQUIPMENT'S FOLLOWING DEMOLITION PLANS, REMOVE ON DEMOLITION PLANS.
- ALL EQUIPMENTS REMOVED THAT IS IN GOOD CONDITION MUST BE RETURNED TO THE OWNER IF HE WISHES TO KEEP THEM.
- ALL RESIDUES MUST BE CLEANED FROM THE CONSTRUCTION SITE. THE CONTRACTOR IS RESPONSIBLE TO FIND A SITE OUT OF THE CONSTRUCTION SITE, TO TRANSPORT AND DISPOSE OF THE RESIDUES, AND THIS FOLLOWING ALL RULES AND REGULATIONS REGARDING TO ENVIRONMENT.
- ALWAYS KEEP THE DEMOLITION SITE CLEAN DURING AND AFTER EVERY WORK DAY.

2.0 TECHNICAL VENTILATION INSTRUCTIONS

2.01 SUPPORTS

- VENTILATION DUCT WORK SHALL BE ADEQUATELY SUPPORTED TO PREVENT VIBRATION, NOISE AND STRESS TO SHEET METAL JOINTS AND CONNECTED EQUIPMENT.
- VENTILATION DUCT WORK SHALL BE SUPPORTED BY HEAVY-DUTY ANGLE IRON AND SUPPORTED BY ROOFS.
- RESPECT REQUIREMENTS INDICATED UNDER THE "TECHNICAL INSTRUCTIONS FOR SEISMIC PROTECTION".

2.02 MANUAL DAMPERS

- MANUAL DAMPERS LOCATED IN DUCTS OF 12" (300MM) OR LESS SHALL BE OF A PARALLEL BLADE CONFIGURATION. ALL OTHER DAMPER SIZES SHALL BE OF OPPOSED BLADE CONFIGURATION. ALL DAMPERS SHALL HAVE AN ADJUSTABLE HANDLE CAPABLE OF MAINTAINING A FIXED BLADE POSITION. SUPPLY AND INSTALL DAMPERS WHERE AIR BALANCING IS REQUIRED.

2.03 SYSTEM START-UP

- VENTILATION SYSTEMS SHALL BE ACTIVATED ONLY AFTER THE FOLLOWING VERIFICATIONS HAVE BEEN MADE:
 - ALL ELECTRICAL CONNECTIONS HAVE BEEN VERIFIED;
 - CORRECT FAN ROTATION HAS BEEN VERIFIED;
 - ALL DUCT WORK IS CLEAN AND FREE FROM DEBRIS;
 - ALL FILTERS ARE NEW AND FREE OF OILS CHECKS;
 - ALL CONSTRUCTION WORK IS COMPLETELY FINISHED.

2.04 INSPECTION ACCESS DOORS

- ALL VENTILATION DUCT WORK SHALL HAVE ADEQUATE INSPECTION ACCESS DOORS TO ALLOW FOR EQUIPMENT ADJUSTMENT, CLEANING, REPAIRS, REPLACEMENT AND VISUAL INSPECTIONS, INCLUDING DUCT WASHING. SHOWN DEFECTS.
- ALL ACCESS DOORS LOULISED AND SUPPLIED BY THE VENTILATION CONTRACTOR, BUT INSTALLED THE GENERAL CONTRACTOR.

2.05 AIR-TIGHT DUCT WORK

- ALL VENTILATION DUCT REQUIRED TO BE "AIR-TIGHT" LEAKING CLASSES FROM 1.0 TO 3.0 WILL HAVE TO BE SUBMITTED TO DUCT-WORK OF A LEAKING CLASS OVER 3.0 WILL BE TESTED ON DEMAND.
- TO PREVENT AIR LEAKS A WATERPROOF EXISTENCE COMPOUND SHALL BE APPLIED INTO ALL HORIZONTAL, VERTICAL AND LONGITUDINAL JOINTS. ALL COMPOUND WORK SHALL HAVE A CLEAN & NEAT APPEARANCE AT ALL TIMES. (SEALING CLASS B FROM SHOWN) FOR A PRESSURE CLASS OF MINIMUM 500 Pa.

2.06 BALANCING TESTS AND VERIFICATIONS

- A SPECIALIZED AIR-BALANCING SUB-CONTRACTOR SHALL BE HIRED BY THE VENTILATION CONTRACTOR TO PERFORM SYSTEM BALANCING TESTS AND VERIFICATIONS. THE REPORT SHALL INCLUDE FINAL EQUIPMENT OPERATION DATA FOR ALL SYSTEMS AND VENTILATING UNITS. THE MARGIN FOR ERROR SHALL NOT EXCEED 5% OF THE VALUES INDICATED ON THE PLANS.
- THE ENGINEER RESERVES THE RIGHT TO EXCLUDE ADJUSTMENTS TO THE BALANCING FOLLOWING THE VERIFICATION OF THE FINAL BALANCING REPORT AND THIS, WITHOUT ANY ADDITIONAL COSTS TO THE PROJECT. THE BALANCING CONTRACTOR ADJUSTMENTS AND MUST THEN AFTER CORRECT HIS REPORT AND RESUBMIT IT.
- RESPECT TESTS AND VERIFICATIONS IN THE PRESENT PROJECT.

3.0 TECHNICAL INSTRUCTIONS FOR SEISMIC PROTECTION DEVICES

3.01 GENERAL

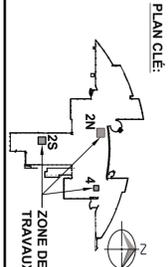
- RESPONSIBILITIES:
 - EACH CONTRACTORS (MECHANICAL AND ELECTRICAL) IS RESPONSIBLE FOR THE SEISMIC RESTRAINT MEASURES RELATED TO ITS DISCIPLINE.
 - SEISMIC RESTRAINT DEVICES AND SYSTEMS SHALL BE DESIGNED AND DEVELOPED BY AN RECOGNIZED ENGINEERING FIRM SHALL BE INCLUDED IN SUBMITTAL FOR EACH CONTRACTOR.
 - EACH CONTRACTOR SHALL INCLUDE ALL SEISMIC RESTRAINT DEVICES AND SYSTEM IN HIS BID.
 - THE CONTRACTOR SHALL PROVIDE SEISMIC RESTRAINT DEVICES AND SYSTEMS TO THE SUPPLIERS OF SEISMIC DEVICES. MUST BE ON THE PREMISES TO SUPERVISE THE INSTALLATION AND THE CONTRACTOR OF SUCH PRODUCTS AS WELL OR SUBMIT A REPORT AND THE APPROPRIATE ONCE INSTALLATION COMPLETED ALL SEISMIC DEVICES AND SYSTEMS SHALL BE INSPECTED BY A SEISMIC ENGINEER RECOGNIZED BY THE PROVINCE OF QUEBEC.
 - ALL SEISMIC RESTRAINT DEVICES AND SYSTEMS SHALL BE SUBMITTED TO THE PROJECTS ENGINEER, AS REQUIRED BY REASONABLE AND ANNOTATED-DESCRIBING CONDITIONS AFTER A DETAILED COPY OF THE PROJECT-REVIEWED AND ANNOTATED-DESCRIBING CONDITIONS AFTER ENGINEER'S APPROVAL.
 - A COPY OF THE PROJECT FILE NOTED WITH AFTER EXECUTION CONDITIONS.
 - ONCE CERTIFICATION IS COMPLETED AND THE REPORT APPROVED, SUBMIT TO THE PROJECT ENGINEER WRITTEN REPORT PREPARED BY THE MANUFACTURER OR THE R.B.D.
- APPLICABLE CODES AND STANDARDS

3.02 APPLICABLE CODES AND STANDARDS

- ASBANE - APPLICATIONS HANDBOOK (SI);
- ASBANE - APPLICATIONS HANDBOOK (SI);
- SACUDA 138 - "PARASISMIC MANUAL GUIDELINES FOR MECHANICAL SYSTEMS";
- ASBANE NO. 1 TO PARASISMIC MANUAL GUIDELINES FOR MECHANICAL SYSTEMS.
- ASBANE E-488.

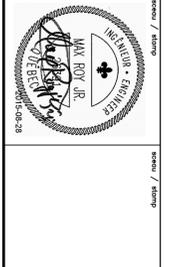
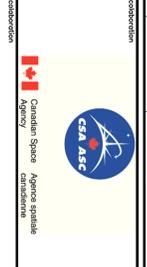
LISTE DES PLANS MÉCANIQUE / MECHANICAL DRAWING SCHEDULE

MECANIQUE - DEVIS	MECANIQUE - SPECIFICATIONS
H-01	H-02
H-02	H-03
H-03	H-04
H-04	H-05
H-05	H-06



THIS PLAN CANNOT BE USED FOR TENDER. THIS PLAN CANNOT BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND ISSUED FOR CONSTRUCTION.

CE PLAN NE PEUT ÊTRE UTILISÉ POUR TENDRE. CE PLAN NE PEUT ÊTRE UTILISÉ POUR CONSTRUCTION UNLESS IL EST STAMPÉ, SIGNÉ ET ÉMIS POUR CONSTRUCTION.



AGENCE SPATIALE CANADIENNE
CANADIAN SPACE AGENCY

PROJET / WORK: AREA SECTOR 2A-2S-100 & 200

MECANIQUE - SPECIFICATIONS

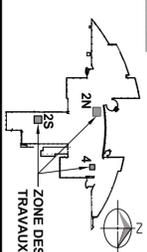
DATE: MARS / MARCH 2015

DESIGNÉ PAR / DESIGNED BY: BENOIT DUÉC

VERIFIÉ PAR / VERIFIED BY: MAX JR. ROY

NO. / SHEET NO: H-02

PLAN CLE:



THIS PLAN CANNOT BE USED FOR TENDER. THIS PLAN CANNOT BE USED FOR CONSTRUCTION.

CE PLAN NE PEUT ÊTRE UTILISÉ POUR SOUMISSER UNE SCELLE. CE PLAN NE PEUT ÊTRE UTILISÉ POUR CONSTRUCTION.

0 28-08-2015 SOUMISSION / TENDER



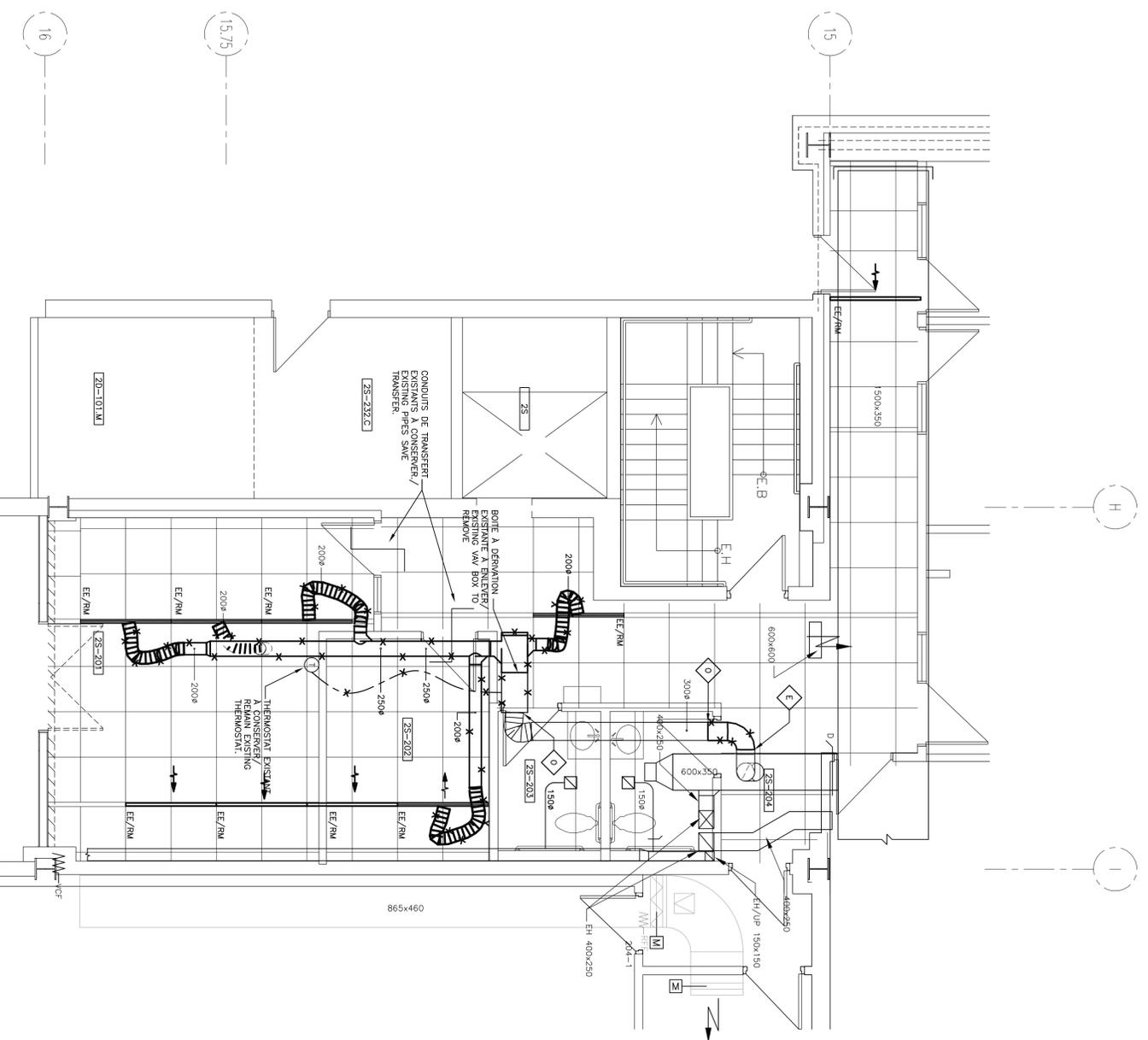
Administrative and contact information section including logos for the Canadian Space Agency, CSA ASC, and the contractor, Experts-Consueils Inc. It also contains a circular seal for the project.

ROCHON EXPERTS-CONSUEILS INC. Mécanique - Électrique

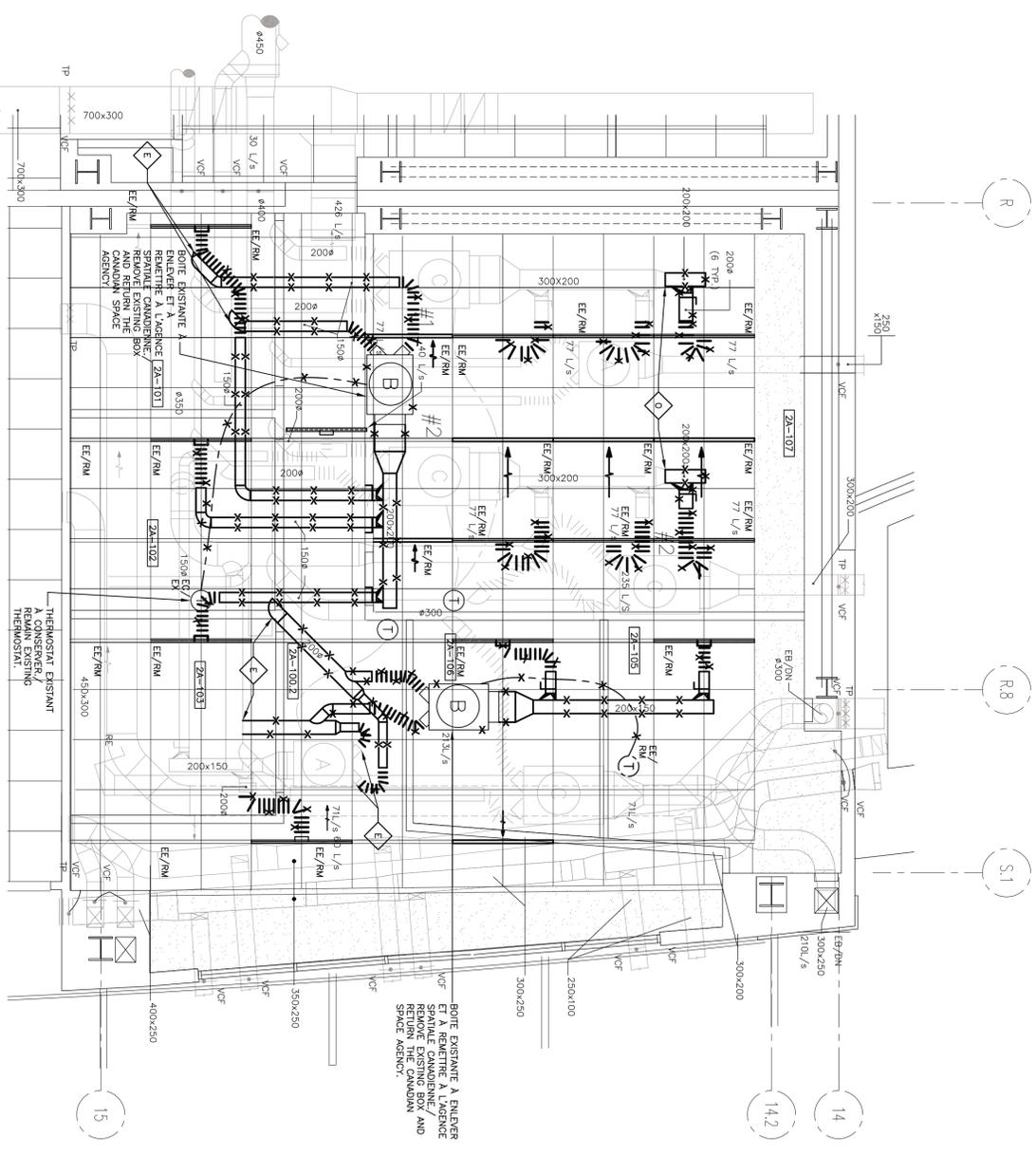
AGENCE SPATIALE CANADIENNE CANADIAN SPACE AGENCY AMÉLIORATIONS CONDITIONS AMBIANTES SECTEUR 2A-100 & SECTEUR 2S-200 / AMBIENT CONDITIONS IMPROVEMENT AREA SECTOR 2A-2S-100 & 200

MÉCANIQUE - VENTILATION EXISTANT / DEMOLITION MECHANICAL - VENTILATION EXISTING / DEMOLITION

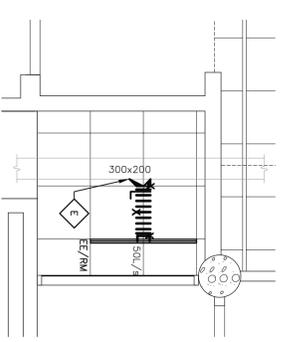
PROJET / PROJECT: KAPICHAU N.T.S. DATE: MARS / MARCH 2015. CLIENT: BENOIT DUBÉ. CONTACT: LYES BOUJAZZ. H-05



EXTRAIT DU NIVEAU 2 PAVILLON 2S / EXTRACT FROM PAVILLON 2S LEVEL 2 EXISTANT - DEMOLITION / EXISTING - DEMOLITION

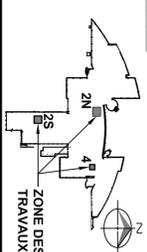


EXTRAIT DU NIVEAU 1 PAVILLON 2N / EXTRACT FROM PAVILLON 2N LEVEL 1 EXISTANT - DEMOLITION / EXISTING - DEMOLITION



EXTRAIT DU NIVEAU 1 PAVILLON 4 / EXTRACT FROM PAVILLON 4 LEVEL 1 EXISTANT - DEMOLITION / EXISTING - DEMOLITION

PLAN CLE:



THIS PLAN CANNOT BE USED FOR TENDER. THIS PLAN CANNOT BE USED FOR CONSTRUCTION.

CE PLAN NE PEUT ÊTRE UTILISÉ POUR SOUMISSER UNE OFFRE. CE PLAN NE PEUT ÊTRE UTILISÉ POUR CONSTRUCTION.

0	28-08-2015	SOUSSION / TENDER
Rev.	JI-MM-AAA	EMS POUR / ISSUED FOR ...

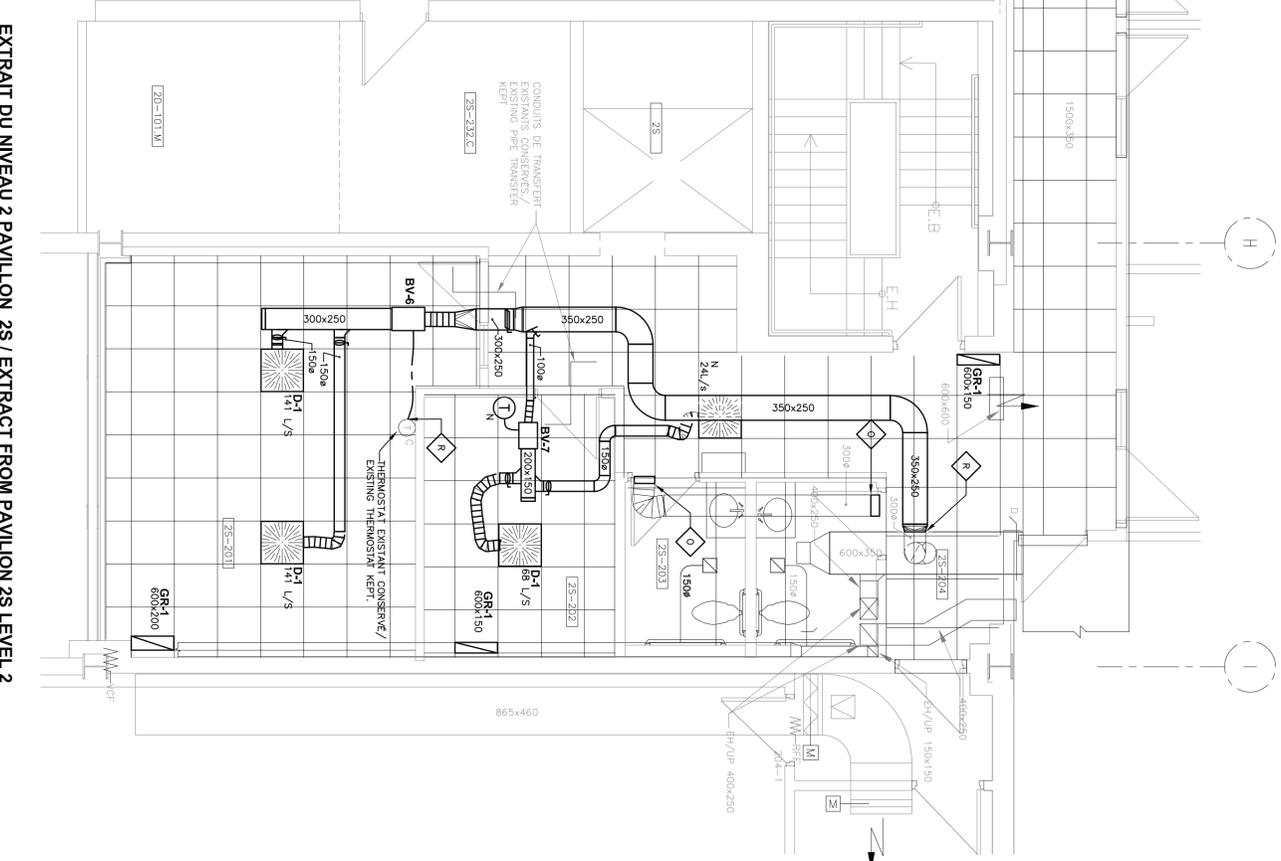


ROCHON
EXPERTS-CONSEILS INC.
Mécanique - Électrique

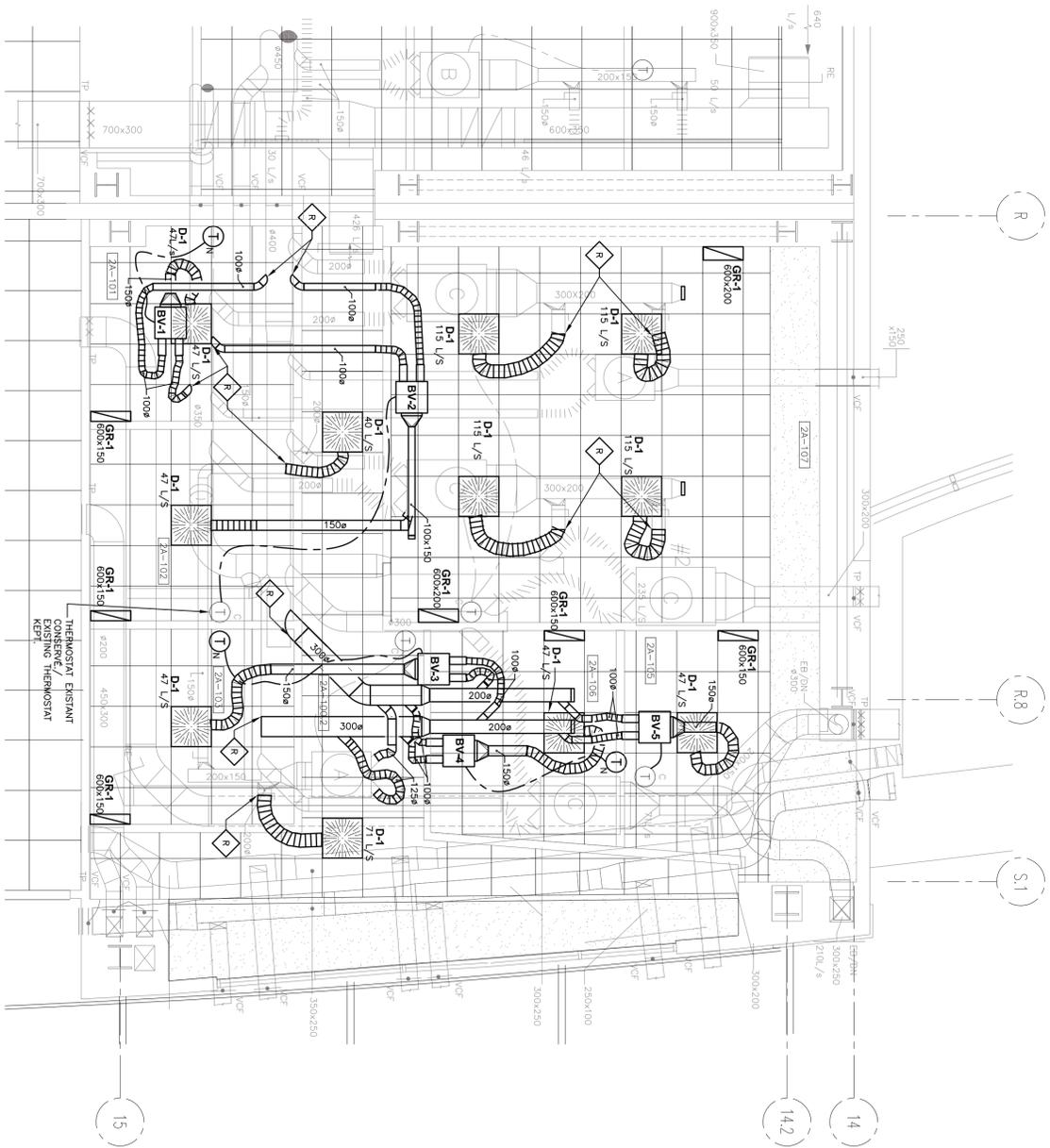
3071, Boulevard de l'Industrie, 1^{er} étage
Laval (Québec) H7V 1Z7
Tél. (450) 522-2227

3071, Boulevard de l'Industrie, 1^{er} étage
Laval (Québec) H7V 1Z7
Tél. (450) 522-2227

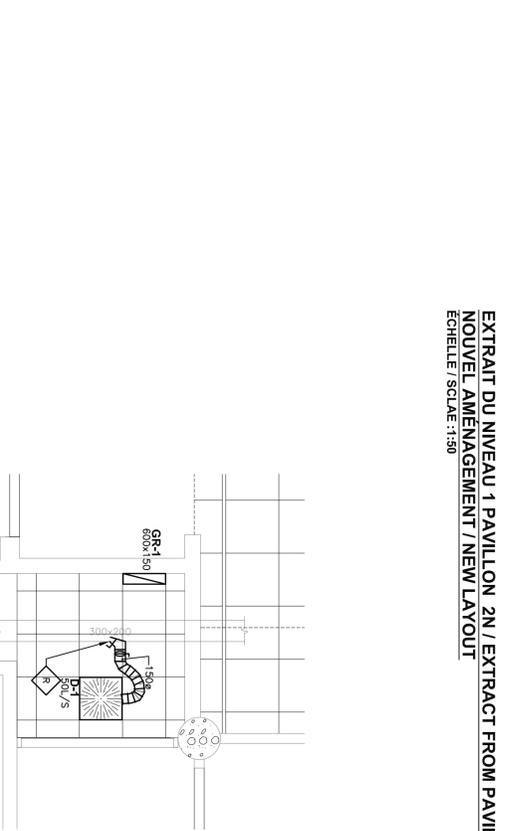
3071, Boulevard de l'Industrie, 1^{er} étage
Laval (Québec) H7V 1Z7
Tél. (450) 522-2227



EXTRAIT DU NIVEAU 2 PAVILLON 2S / EXTRACT FROM PAVILLON 2S LEVEL 2
NOUVEL AMÉNAGEMENT / NEW LAYOUT
ÉCHELLE / SCALE: 1:50



EXTRAIT DU NIVEAU 1 PAVILLON 2N / EXTRACT FROM PAVILLON 2N LEVEL 1
NOUVEL AMÉNAGEMENT / NEW LAYOUT
ÉCHELLE / SCALE: 1:50



EXTRAIT DU NIVEAU 1 PAVILLON 4 / EXTRACT FROM PAVILLON 2N LEVEL 1
NOUVEL AMÉNAGEMENT / NEW LAYOUT
ÉCHELLE / SCALE: 1:50

AGENCE SPATIALE CANADIENNE
CANADIAN SPACE AGENCY

AMÉLIORATIONS CONDITIONS AMBIANTES
SECTEUR 2A-100 & SECTEUR 2S-200 /
AMBIENT CONDITIONS IMPROVEMENT
AREA SECTOR 2A-2S-100 & 200

6787 route de l'Aéroport, Saint-Hubert (Québec)
dessiné / drawn:

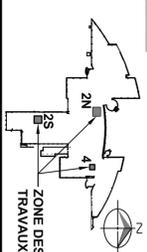
MÉCANIQUE - VENTILATION
NOUVEL AMÉNAGEMENT
MECHANICAL - VENTILATION
NEW LAYOUT

dessiné / drawn: MMS/MARCH 2015
révisé par / revised by: no projet / project no
BENOÎT DUBÉ technicien méé. A1-4-3.1.2
L'YES BOUJAZZ
vérifié par / verified by: MAX JR. ROY, ing.

#PROJET R.E.C.: 15-041B

Format d'impression: métrique A1 (841mm x 594mm)

PLAN CLE:



ZONE DES TRAVAUX

THIS PLAN CANNOT BE USED FOR TENDER. THIS PLAN CANNOT BE USED FOR CONSTRUCTION.

CE PLAN NE PEUT ÊTRE UTILISÉ POUR SOUMISSION. CE PLAN NE PEUT ÊTRE UTILISÉ POUR CONSTRUCTION.

0	28-08-2015	SOUSSION / TENDER
Rev.	JI-MM-AAA	EMS POUR / ISSUED FOR ...

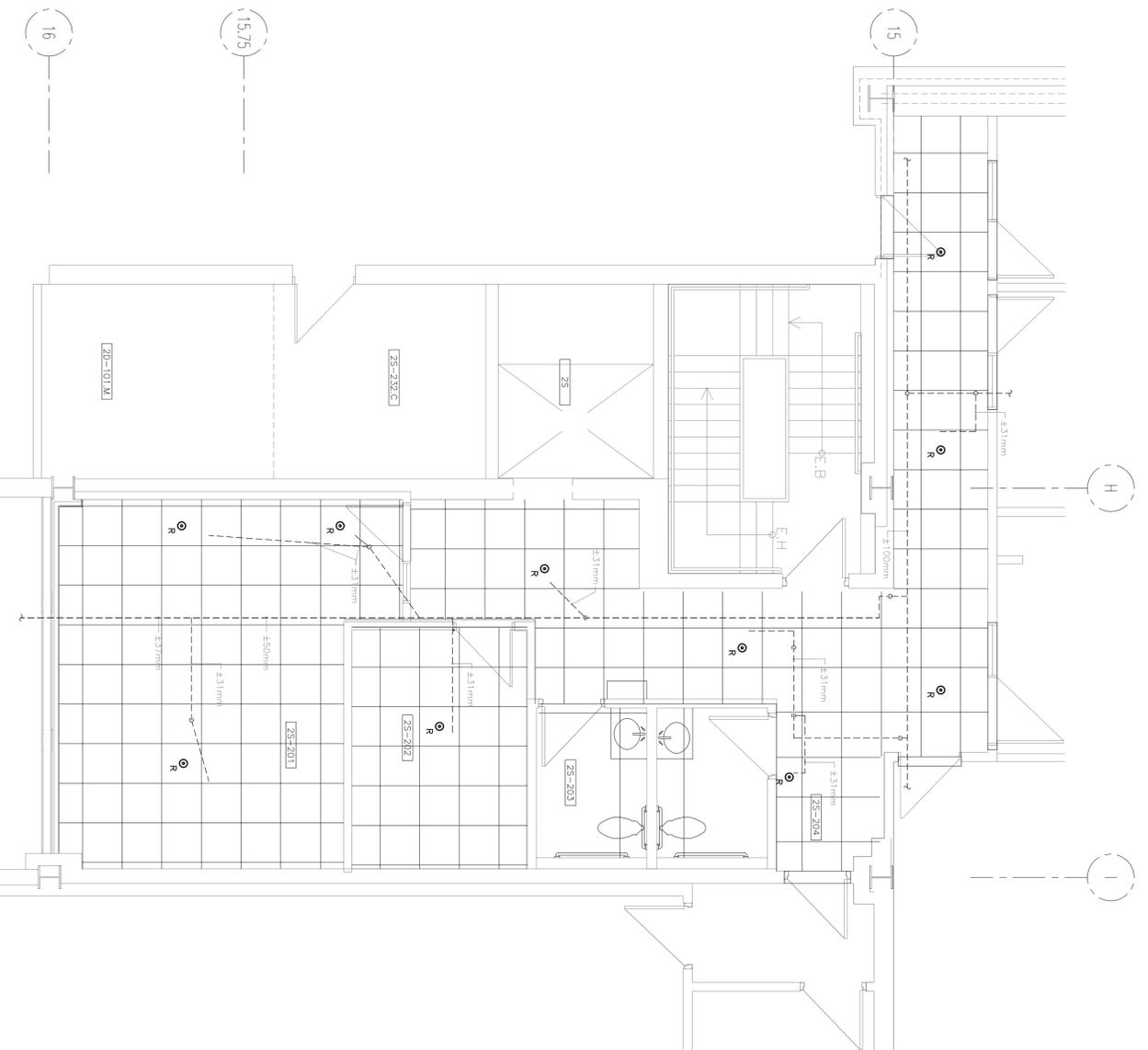
Canadian Space Agency / Agence spatiale canadienne

MECHANICAL ENGINEER

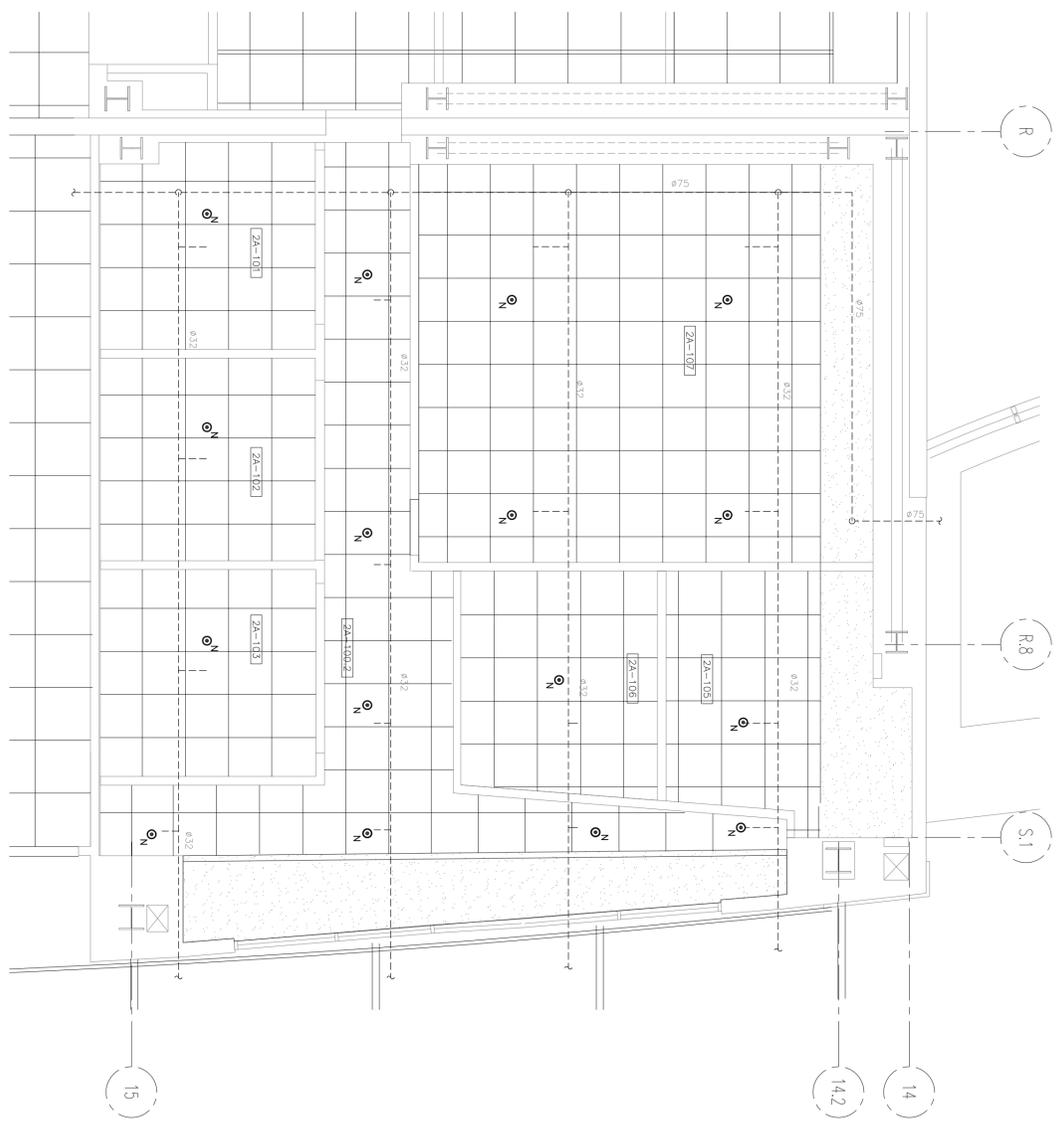
MAX ROY, JR.

ROCHON EXPERTS-CONSEILS INC. Mécanique - Électrique

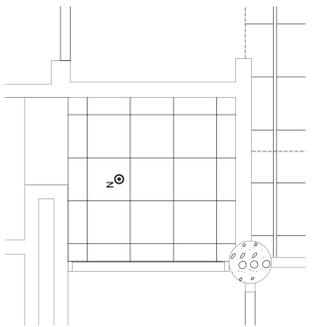
3071, Lakeshore Blvd. W. 12^e 200 Markham, ON L3R 9W7
 Tel: (416) 522-2227 Fax: (416) 522-2227



EXTRAIT DU NIVEAU 2 PAVILLON 2S / EXTRACT FROM PAVILLON 2S LEVEL 2
 NOUVEL AMÉNAGEMENT / NEW LAYOUT
 ÉCHELLE / SCALE 1:50



EXTRAIT DU NIVEAU 1 PAVILLON 2N / EXTRACT FROM PAVILLON 2N LEVEL 1
 NOUVEL AMÉNAGEMENT / NEW LAYOUT
 ÉCHELLE / SCALE 1:50



EXTRAIT DU NIVEAU 1 PAVILLON 4 / EXTRACT FROM PAVILLON 4 LEVEL 1
 NOUVEL AMÉNAGEMENT / NEW LAYOUT
 ÉCHELLE / SCALE 1:50

NOTE:

- LES TITRAUX DE GICLIERE SONT INDIGUES A TITRE D'INFORMATION SEULEMENT. L'ENTREPRENEUR DOIT VALIDER LES POSITIONS ET LES DIAMETRES SUR PLACE. LES GICLIERES SONT INDIGUES SEULEMENT A TITRE D'INFORMATION SEULEMENT. L'ENTREPRENEUR DOIT VALIDER LES POSITIONS ET LES DIAMETRES SUR PLACE.
- THE SPRINKLER PIPES ARE INDICATED FOR INFORMATION PURPOSE ONLY. THE POSITIONS AND LOCATIONS ON SITE.

AGENCE SPATIALE CANADIENNE
 CANADIAN SPACE AGENCY

AMELIORATIONS CONDITIONS AMBIANTES
 SECTEUR 2A-100 & SECTEUR 2S-200 /
 AMBIENT CONDITIONS IMPROVEMENT
 AREA SECTOR 2A-2S-100 & 200

6787 route de l'Aéroport, Saint-Hubert (Québec)

MÉCANIQUE - PROTECTION
 INCENDE NOUVEL
 AMÉNAGEMENT / MECHANICAL -
 FIRE PROTECTION NEW LAYOUT

PROJET / CODE	15-0411B
ARCHITECTE / ARCHITECT	MMSP / MARCH 2015
PROFESSEUR / REVIEWED BY	BENOIT DUBÉ / 2015-03-12
DESIGNÉ PAR / DESIGNED BY	BENOIT DUBÉ / 2015-03-12
VALIDÉ PAR / VALIDATED BY	MAX JR. ROY / 15-0411B

#PROJET R.E.C.: 15-0411B

Format d'impression: métrique A1 (841mm x 594mm)