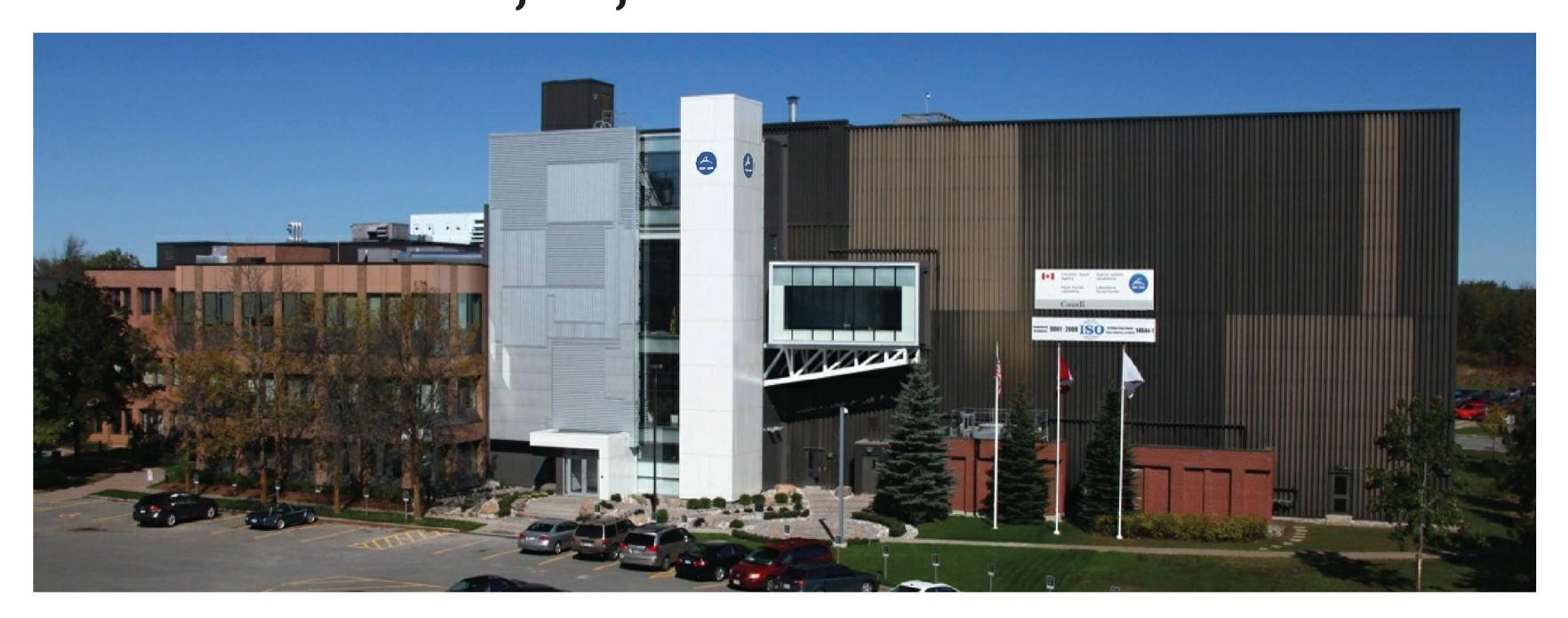
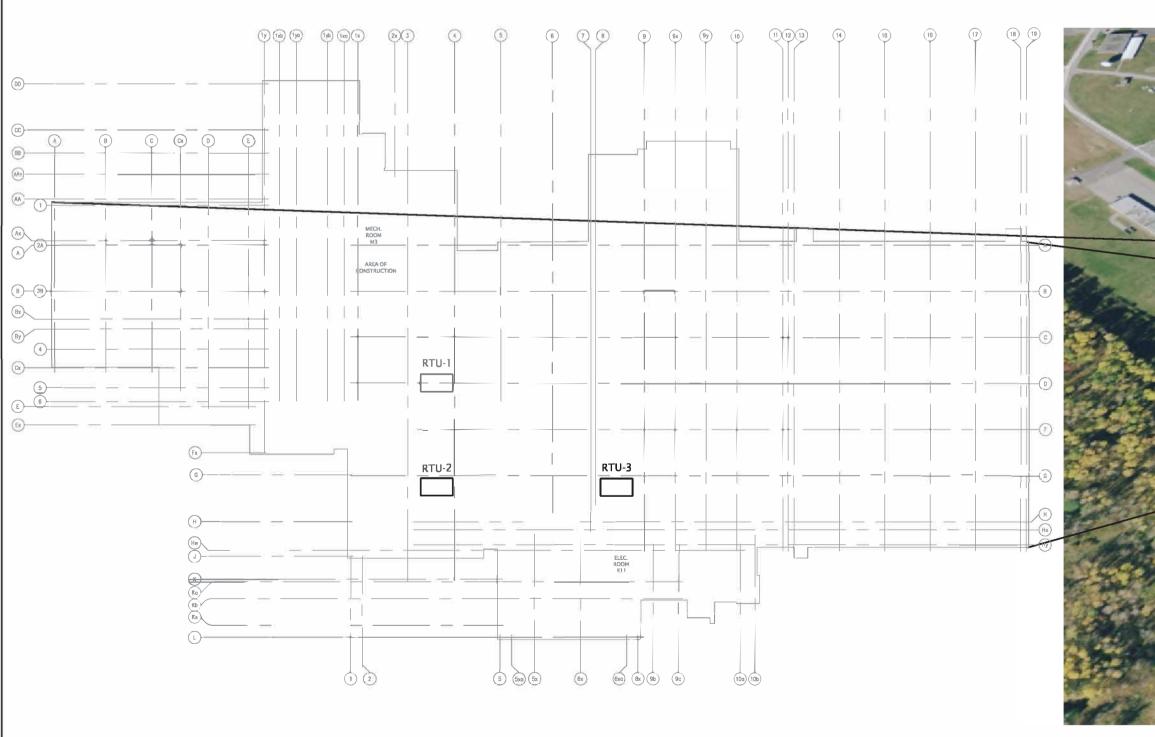
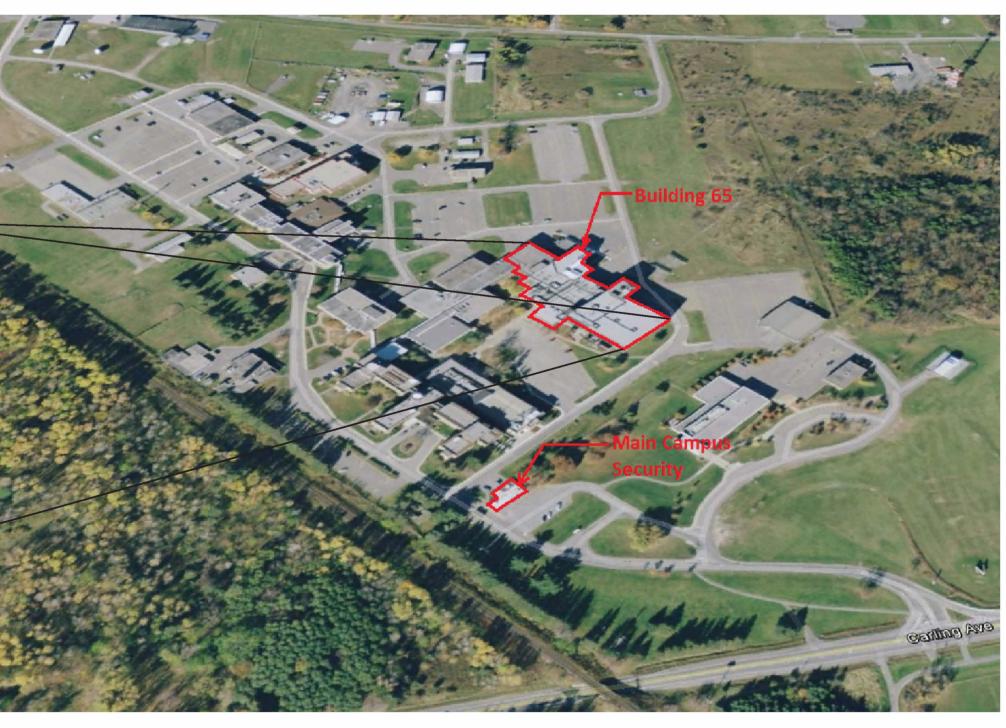
## DAVID FLORIDA LABORATORY

### BUILDING 65, SHIRLEY'S BAY PHASE 2 RTU 1, 2, 3 REPLACEMENT



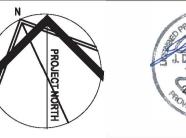




	DRAWING LIST
DRAWING	DESCRIPTION
G1 MECHANICAL	DRAWING LIST, & SITE KEYPLAN
М1	MECHANICAL GENERAL NOTES, LEGEND, SCHEDULES & DETAILS
M2	ROOF LEVEL HVAC DEMOLITION
М3	ROOF LEVEL HVAC NEW WORK
M4	THIRD LEVEL HVAC DEMOLITION & NEW WORK
ELECTRICAL	
E1	ELECTRICAL GENERAL NOTES, LEGENDS, AND SCHEDULES
E2	ELECTRICAL SINGLE LINE DIAGRAM AND BASEMENT LEVEL KEYPI AN
E3	PARTIAL 2ND & 3RD LVL POWER & SYSTEMS DEMOLITION & NEW WORK
E4	PARTIAL 4TH LVL POWER & SYSTEMS DEMOLITION & NEW WORK
	•

ÉRIC VACHON Director, Security & Facilities

M. FARID, P. Eng.







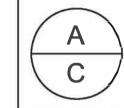
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Contractor to verify all dimensions & conditions on site and immediately notify the engineer of all discrepancies.

	C	
03	Re-Issued for Permit/Tender	2020.05.22
02	Issued for Permit/Tender	2017.08.09
01	Issued for Review	2017.06.28
revisions	description	date



PHASE 2 RTU 1, 2, 3 REPLACEMENT

**ADDRESS** 

DRAWING LIST, & SITE KEYPLAN

Designed By	141.401.014/107	Conçu par
Date	M.LACHOWICZ	(yyyy/mm/dd)
Drawn By	D DEG 14 DDING	Dessiné par
Date	P.DESJARDINS	(yyyy/mm/dd)
Reviewed By	M.LACHOWICZ	Examiné par
Date	WI.LACHOWICZ	(yyyy/mm/dd)
Approved By	M I A CLIOWICZ	Approuvé par
Date	M.LACHOWICZ	(yyyy/mm/dd)
Tender		Soumission
	M.LACHOWICZ	
Project Manager	Administ	rateur de projets
Project no.	CSA15-M7b	No. du projet
		2016-065
Drawing no.	G1	No. du dessin

ROOF LEVEL KEY PLAN

#### DFL PROJECTS GENERAL NOTES, & PROCEDURES:

INTENDED

- 1. THE MECHANICAL CONTRACTOR SHALL ACT AS THE PRIME CONTRACTOR. PRIME CONTRACTOR SHALL RETAIN ALL REQUIRED SUB-TRADES & COORDINATE & SCHEDULE ALL EFFORTS FOR PROJECT SCOPE OF WORK. HEREAFTER THE MECHANICAL CONTRACTOR SHALL BE REFERRED TO AS "CONTRACTOR".
- 2. THE CONTRACTOR SHALL ARRANGE AND PAY FOR ALL NECESSARY PERMITS, INSPECTIONS & RE-INSPECTIONS REQUIRED TO BE PERFORMED BY LOCAL AUTHORITIES HAVING IURISDICTION INCLUDING INSPECTION AND TESTING EXCEPT FOR BUILDING PERMIT TO THE CITY OF OTTAWA WHICH WILL BE APPLIED FOR BY OWNER. TURN OVER TO THE

OWNER ALL ORIGINAL APPROVAL DOCUMENTATION & CERTIFICATES.

- . CONTRACTOR TO BE RESPONSIBLE FOR THE PROVISION (SUPPLY AND INSTALLATION) OF ALL MATERIALS, EQUIPMENT & SERVICES SHOWN ON THE PROJECT DRAWINGS & SPECIFICATIONS AS REQUIRED FOR A FULLY OPERABLE SYSTEM, UNLESS CHANGED OR REPLACED BY REVISED DRAWINGS, SPECIFICATIONS OR ADDENDA.
- 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ARCHITECTURAL, STRUCTURAL, MECHANICAL FLECTRICAL PLUMBING & FIRE PROTECTION WORK BE RESPONSIBLE FOR ALL FLOOR CUTTING, CORE DRILLING, ALL CHASES, OPENINGS AND PATCHING AS MAY BE REQUIRED BY ALL SUB TRADES WHO MAY OR MAY NOT BE UNDER HIS CONTRACT
- 5. DRAWINGS ARE NOT INTENDED TO SHOW THE DETAILS & ROUTE OF EACH COMPONENT TO BE INSTALLED OR REMOVED. THEY ARE ONLY PROVIDING A GENERAL OVERVIEW OF THE PROJECT SCOPE. THE CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW THE SITE CONDITIONS DURING THE TENDER PERIOD AND EXAMINE THE EXTENT OF THE DEMOLITION, REMOVALS & NEW INSTALLATIONS TO INCLUDE IN THE TENDER PRICE ALL NECESSARY LABOR AND MATERIAL REQUIRED FOR A FULLY OPERABLE SYSTEM AS
- 6. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT CODES, BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES WHERE VARIED BY THE PROJECT SPEC
- 7. ALL DIMENSIONS TO BE VERIFIED ON SITE. EXACT LOCATION & ELEVATION OF EQUIPMENT IS SUBJECT TO SITE MEASUREMENTS.
- 8. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR ALL MATERIAL, EQUIPMENT & FIXTURES TO ENGINEER FOR APPROVAL BEFORE COMMENCING INSTALLATION OR ORDERING, ALL SAMPLES TO BE PROVIDED UPON CSA REQUEST AT NO ADDITIONAL COST
- 9. ALL SUPPLIED MATERIALS, FIXTURES & EQUIPMENT TO BE NEW, FREE FROM DEFECTS, CERTIFIED & APPROVED BY CODE. REUSE OF ANY EXISTING PARTS IN SOT PERMITTED UNLESS APPROVED BY OWNER
- 10. CSA SHALL BE GIVEN THE OPTION OF RETAINING ANY REMOVED COMPONENTS OR EQUIPMENT. COORDINATE AND HAND OVER TO CSA PROJECT MANAGER AS REQUIRED. DISPOSE OF ANY REMAINING OR UNWANTED EQUIPMENT OR SERVICES AND REMOVE OFF SITE IN A LEGAL MANNER AND COMPLY WITH THE ENVIRONMENTAL PROTECTION ACT. ONTARIO REGULATIONS FOR WASTE MANAGEMENT PROGRAM. CERTIFICATE OF DISPOSAL TO BE HANDED OVER TO OWNER AFTER REMOVALS ARE DONE.
- 11. INSTALL ALL EQUIPMENT IN FULL ACCORDANCE WITH THE MANUFACTURER SPECIFICATIONS & RECOMMENDATIONS.
- 12. ALL TRADES SHOULD BE LICENSED TO PERFORM ALL WORK SHOWN ON THE DRAWINGS INCLUDING REMOVALS & DEMOLITION.
- 13. DO NOT DAMAGE EXISTING FIRE SEPARATIONS AND FIRE PROTECTIONS IN THE PROJECT AREAS. ANY DAMAGES INCURRED TO EXISTING FIRE SEPARATIONS AND PROTECTIONS SHALL BE RESTORED TO APPROVED CONDITIONS TO MEET REQUIRED RATING AND CODES AT NO ADDITIONAL COSTS TO THE PROJECT.
- 14. UNDER ANY CIRCUMSTANCES, DO NOT BLOCK REQUIRED ACCESS TO EXITS AND FIRE ESCAPE ROUTES DURING THE PROJECT DURATION. ALL EXISTING LIFE SAFETY SYSTEMS AND INDICATORS SHALL BE OPERATIONAL AT ALL TIMES.
- 15. SMOKE EATERS & POWERED EXHAUST FANS VENTED TO OUTSIDE OF BUILDING MUST BE USED DURING ALL BRAZING / WELDING / SOLDERING / CUTTING / GRINDING ACTIVITIES TO MINIMIZE CONTAMINATION & ODOR TO ADIACENT AREAS PARTICULARLY IN CLEAN ROOMS. PROVIDE 72 HOUR NOTICE TO CSA TO ARRANGE FOR HOT WORK PERMITS.
- 16. CONTRACTOR TO PROTECT ALL ARCHITECTURAL FINISHES & FLOORING DURING CONSTRUCTION, BE RESPONSIBLE FOR ANY DAMAGES TO EXISTING SURFACES RESULTING FROM ALL PROJECT'S WORK. THE CONTRACTOR SHALL MAKE GOOD ALL DAMAGED SURFACES INCLUDING ANY PAINT TOUCH-UPS REQUIRED, REPAIR ALL WALLS, FLOORS & CEILINGS IN CORE AREA WHERE MECHANICAL & ELECTRICAL SERVICES PASS THROUGH.
- 17. EXACT TARPING LIMITS AND ACCESS ROUTES TO BE DETERMINED ON SITE IN
- COORDINATION WITH CSA PROJECT MANAGER. 17.1. ALL TARPS TO BE NEW HEAVY DUTY POLYETHYLENE, WATER / MILDEW / TEAR RESISTANT, WHITE, TIGHT SEALED FROM DECK TO FLOOR, CONTRACTOR TO PROVIDE ACCESS ZIPPERS OR DOORS AS REQUIRED BY CSA, USE METAL STUDS AS FRAMING SUPPORTS, NO WOOD MATERIALS TO BE USED IN TARPS CONSTRUCTION UNLESS APPROVED BY CSA.
- 17.2. APPROVED METHODS TO ATTACH STUDS / TARPS TO BUILDING AS FOLLOW 17.2.1. ON FLOORS: HEAVY DUTY COMMERCIAL DOUBLE SIDED TAPE TO SECURE METAL STUDS TO FLOORS, USE OF SCREWS OR TAPCONS ARE NOT
- 17.2.2. ON DRYWALLS / MASONRY / METAL SIDING WALLS: DUCT OR TUCK TAPE IS NOT ALLOWED DIRECTLY ON BUILDING FINISHES AS IT WILL DAMAGE THEM WHEN REMOVED; APPLY MASKING PAINT GREEN TAPE FIRST AND THEN DUCT / TUCK TAPE ON TOP OF IT. STUDS CAN BE SCREWED TO DRYWALL / MASONRY WALLS GIVING THAT ALL HOLES WILL BE PATCHED & PAINTED (WHOLE WALL / AREA TO BE PAINTED, SMALL / LOCAL PAINT PATCHES ARE
- NOT PERMITTED) 17.3. TARPS COULD BE HANGED OFF BUILDING STEEL STRUCTURAL USING HIGH STRENGTH CABLE TIES, PROVIDE HEAVY GAUGE UNISTRUTS AS NEEDED FOR CROSS RUNS OR TO DISTRIBUTE TARPS LOAD
- 17.4. HANGING TARPS FROM BUILDING SERVICES (DUCTWORK, CONDUITS, PIPES, SUPPORTS, HANGERS ... ETC.) IS NOT PERMITTED
- 17.5. CONTRACTOR IS RESPONSIBLE FOR CLEANING, PATCHING, REPAIRING & PAINTING ALL DAMAGED SURFACES & TAPE MARKS AFTER REMOVING TARPS.
- 18. PROVIDE FLOOR PROTECTION TO ENTIRE PROJECT AREAS AS FOLLOW: 18.1. FLOOR TO BE WIPED CLEAN FROM ANY DEBRIS OR DUST PARTICLES. 18.2. PROVIDE MIN. 1/8" FOAM LAYER DIRECTLY ON ALL FLOORING. 18.3. PROVIDE HARD SHEETS ON TOP OF FOAM LAYER. ALL SHEETS SEAMS TO BE DUCT-TAPED TO PREVENT DEBRIS / DUST FROM GETTING TRAPPED UNDER THE
- 19. PROVIDE FURNITURE AND EQUIPMENT PROTECTION AS FOLLOW:

PROTECTION SHEETS. USE OF OSB SHEETS IS NOT PERMITTED.

BEFORE COMMENCING ANY WORK.

PWGSC A1 (841x594)

19.1. OFFICE / LAB FURNITURE AND EQUIPMENT: TO BE COMPLETELY COVERED AND WRAPPED WITH NEW HEAVY DUTY CLEAR PLASTIC ROLL SHEETS 19.2. SENSITIVE LAB TESTING EQUIPMENT: TO BE COMPLETELY COVERED AND WRAPPED

WITH NEW HEAVY DUTY CLEAR PLASTIC ROLL SHEETS, CLEAN SCAFFOLDING TO BE

ERECTED ON TOP OF ALL LAB EQUIPMENT TO PROTECT FROM POSSIBLE FALLING

- 20. CONTRACTOR TO PROVIDE BILINGUAL CONSTRUCTION, ACCESS & SAFETY SIGNAGE, SIGNS TO BE POSTED ON ALL PROJECT FENCES & ENTRANCES AT THE START OF PROJECT AND
- 21. ACCESS TO THE SITE FOR MATERIAL, WORK FORCES AND FOR WASTE REMOVAL IS TO BE COORDINATED WITH CSA PROJECT MANAGER, USE ONLY ELEVATORS DESIGNATED BY CSA AND PROTECT THEM FROM DAMAGE.
- 22. WHEN TESTING ACTIVITIES ARE NOT UNDERWAY, LARGE OR SMALL LOADING DOCKS CAN BE USED TO MOVE MATERIALS IN AND OUT OF THE BUILDING FROM 7:00 AM TO 8:00 AM WITHOUT CSA NEEDING TO PROVIDE NOTICE TO BUILDING STAFF. IF ACCESS IS REQUIRED AFTER THIS TIME OR FOR LONGER PERIODS, 72 HOUR NOTICE MUST BE PROVIDED TO CSA

- TO CONFIRM AVAILABILITY AND ARRANGE FOR PROPER NOTICES.
- 23. SANITARY FACILITIES WILL BE ASSIGNED FOR CONTRACTOR'S PERSONNEL. OTHERS SHALL NOT BE USED. KEEP FACILITIES CLEAN
- 24. ONLY DESIGNATED AREAS ARE TO BE USED FOR LUNCH AND BREAK TIME. ALL OTHER AREAS ARE OFF LIMITS INCLUDING CAMPUS CAFETERIA.
- 25. CONTRACTOR TO RESPECT ALL BUILDING FLOOR LOADING LIMITATIONS, COORDINATE AND CONFIRM WITH CSA PROJECT MANAGER PRIOR TO BRING IN ANY HEAVY TOOLS,
- EQUIPMENT AND LIFTS. 26. CONTRACTOR SHALL BE RESPONSIBLE TO KEEP THE OWNER'S ACCESS AREAS AND
- CORRIDORS CLEAN AT ALL TIMES. 26.1. CLEAN AND REMOVE ALL DEMOLITION AND CONSTRUCTION WASTE FROM PROIECT SITE ON DAILY BASIS AND UPON COMPLETION OF PROJECT.
- 26.2. DO NOT USE CSA WASTE CONTAINERS. AN AREA WILL BE DESIGNATED FOR LOCATING CONTRACTOR WASTE BINS 26.3. CONTRACTOR TO PROVIDE ALL CLEANING EQUIPMENT & SUPPLIES. USE OF BUILDING CLEANING EQUIPMENT OR SUPPLIES ARE NOT PERMITTED
- 27. DO NOT SUBJECT ANY PART OF THE BUILDING TO ANY NOISE, DUST OR ANY OTHER UNACCEPTABLE ENVIRONMENTAL CONDITIONS DURING THE COURSE OF THE PROJECT. ANY NOISY / DUSTY / SMELLY ACTIVITIES SHALL BE DONE AFTER REGULAR WORKING HOURS OR WEEKENDS, COORDINATE WITH CSA PROJECT MANAGER WITH A MINIMUM
- NOTICE OF 72 HOURS. 28. ALL PENETRATIONS THROUGH WALLS AND FLOORS SHALL BE SAW-CUT OR CORE DRILLED. JACK HAMMERING IS NOT PERMITTED. ALL WALLS, FLOORS & CEILINGS PENETRATIONS TO
- 29. PARTS NOTED TO BE SUPPLIED BY DEPARTMENTAL REPRESENTATIVE SHALL BE FULLY INSTALLED & SUPPORTED BY CONTRACTOR AT NO ADDITIONAL COST.

BE SEALED BY CONTRACTOR IN ACCORDANCE WITH APPLICABLE CODES & THE ENGINEER'S

- 30. PROIECTS MAY TAKE PLACE IN A CLEANROOM ENVIRONMENT, MANDATING SPECIAL MEASURES BE TAKEN TO REDUCE LABORATORY DISRUPTION. CLASS 8 CLEANROOM STANDARDS ARE TO BE MET FOR THE AREA SURROUNDING CONSTRUCTION AT ALL TIMES AND ARE SUBJECT TO VERIFICATION.
- 31. ALL PERSONNEL MUST ATTEND MANDATORY DFL BRIEFING ON THE FIRST DAY OF PROJECT AND BEFORE STARTING ANY WORK, ADHERE TO THE INFORMATION PRESENTED AT ALL TIMES. ANY PERSON WHO DID NOT ATTEND THIS BRIEFING WILL NOT BE ALLOWED TO WORK ON SITE - NO EXCEPTIONS
- 32. IMPROPER / UNCLEAN / RIPPED CLOTHING, FOUL LANGUAGE, IMPROPER BEHAVIOR. SMOKING IN UNDESIGNATED AREAS INCLUDING F-CIGARETTES WILL NOT BE TOLERATED AND WORKER WILL BE ESCORTED OFF CAMPUS IMMEDIATELY - NO EXCEPTIONS.
- 33. CSA, AT THEIR DISCRETION, MAY REQUEST A WORKER TO LEAVE THE SITE IF THERE IS DEMONSTRATED IMPAIRED MENTAL OR PHYSICAL CAPARILITY AFFECTING HIS/HER WORK PERFORMANCE AND POSSIBLY PUTTING OTHERS AT RISK DUE TO CONSUMPTION OF ALCOHOL OR ILLEGAL SUBSTANCES.
- 34. DFL IS A HIGH PROFILE OCCUPIED BUILDING, USE OF MUSIC OR RADIO ON SITE IS NOT PERMITTED AT ALL TIMES.
- 35. ALL PRIME CONTRACTOR & SUB-TRADES WORKERS HAVE TO BE ESCORTED AT ALL TIMES WHILE IN BUILDING AND ON CAMPUS 35.1. CSA WILL PROVIDE SECURITY COMMISSIONAIRES TO ESCORT
- 35.2 PRIOR TO PROJECT START, GC TO PROVIDE A FULL LIST OF ALL PERSONNEL WORKING ON THE PROIECT AS WELL AS ENGINEERS. SUPPLIERS & INSPECTORS IF POSSIBLE TO ISSUE NECESSARY FORMS FOR SITE AND BUILDING ACCESS. 35.3. PROVIDE AT LEAST 72 HOUR NOTICE FOR ANY ADDITIONAL NAMES OR FOR AFTER
- HOURS OR WEEKEND WORK. 35.4. NOTIFY CSA IMMEDIATELY OF ANY CHANGE IN SCHEDULE THAT AFFECTS THE NEED
- FOR SECURITY ESCORTS 35.5. INDIVIDUALS WHO ARE NOT ON THAT LIST WILL BE DENIED ACCESS WITH NO
- 36. CONTRACTOR REPRESENTATIVE HAS TO BE PRESENT ON SITE AT ALL TIMES AND ACCOMPANY ALL SUB-TRADE WORKERS; SUB-TRADES ARE NOT ALLOWED TO BE ON SITE OR TO WORK WITHOUT THE PRESENCE OF PRIME CONTRACTOR - NO EXCEPTIONS
- 37. WEEKEND AND/OR AFTER-HOURS SHUTDOWNS TO BE SCHEDULED IN AGREEMENT WITH CSA PROJECT MANAGER. PROVIDE AT LEAST 72 HOURS NOTICE IN ADVANCE.
- 38. CSA IS COMMITTED TO ENSURING A HEALTHY AND SAFE ENVIRONMENT FOR ITS
- EMPLOYEES. CONTRACTORS AND VISITORS AND WILL ALIGN ITSELF WITH CONTRACTORS WHO SHARE IN THIS VISION.
- 38.1. THE REQUIREMENTS OUTLINED BELOW ARE PROVIDED AS REFERENCE AND ARE THERE TO ASSIST THE CONTRACTING COMPANY WHO PERFORMS THE WORK AND ACCEPTS THIS COMMITMENT COMPLETELY: 38.1.1. ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT:
- HTTP://WWW.E-LAWS.GOV.ON.CA 38.1.2. INFRASTRUCTURE HEALTH AND SAFETY ASSOCIATION "GUIDE TO DEVELOPING HEALTH AND SAFETY POLICIES AND PROGRAMS IN CONSTRUCTION" A COMPREHENSIVE GUIDE GEARED TO MID- TO LARGE-SIZED GENERAL CONTRACTORS FOR DEVELOPING AND IMPLEMENTING AN
- EFFECTIVE HEALTH AND SAFETY PROGRAM: HTTP://WWW.IHSA.CA 38.1.3. INFRASTRUCTURE HEALTH AND SAFETY ASSOCIATION "CONSTRUCTION HEALTH AND SAFETY MANUAL". GUIDANCE ON HAZARD CONTROLS FOR
- ONTARIO CONTRACTORS: HTTP://WWW.IHSA.CA 38.2. THE CONTRACTOR WILL BE REQUIRED TO PREPARE AND SUBMIT TO THE CSA PROIECT MANAGER A FULL PROIECT HEALTH AND SAFETY PLAN. HEREIN CALLED PHSP. PRIOR TO THE COMMENCEMENT OF ANY WORKS AND WITHIN 2 WEEKS OF
- CONTRACT AWARD. 38.3. THE CONTRACTOR SHALL PROVIDE CSA PROJECT MANAGER A COPY OF ALL NOTICES OR OTHER WRITTEN CORRESPONDENCE PROVIDED TO OR RECEIVED BY THE
- ONTARIO MINISTRY OF LABOR, FOR THE DURATION OF THE CONTRACT. 38.4. THE CONTRACTOR SHALL FULLY IMPLEMENT THE PHSP FOR THE FULL DURATION OF THE CONTRACT.
- 38.5. A COPY OF ALL APPLICABLE TRAINING CERTIFICATES MUST BE PROVIDED PRIOR TO COMMENCING ANY WORK. CERTIFICATES MUST SHOW EXACT COMPANY NAME AND ADDRESS THAT PROVIDED THE TRAINING. CSA RESERVES THE RIGHT TO REQUEST THE COURSE OUTLINE FROM THE COMPANY THAT PROVIDED THE TRAINING, IF THE PROOF OF TRAINING DOES NOT DEMONSTRATE THE WORKER AS BEING COMPETENT OPERATORS, FURTHER TRAINING MAY BE REQUESTED BY THE CSA PRIOR TO COMMENCING ANY WORK AT NO ADDITIONAL COST.
- 39 CONTRACTOR TO PROVIDE A MINIMUM OF 48 HOUR NOTICE TO CSA PRIOR FOR ANY DELIVERIES GENERAL CONTRACTOR MUST BE ON SITE TO RECEIVE THE SHIPMENT IF THE DELIVERY PERTAINS TO LIFTING EQUIPMENT, THE QUALIFIED CONTRACTOR SCHEDULED TO USE THE EQUIPMENT MUST INSPECT AND RECEIVE THE LIFT FROM THE COMPANY.
- 40. CONTRACTOR AND ALL HIS SUB-TRADES ARE RESPONSIBLE TO PROVIDE ALL LADDERS SCAFFOLDING, LIFTS, CRANES AND ALL OTHER EQUIPMENT & TOOLS REQUIRED FOR PROJECT SCOPE INCLUDING INSTALLING & REMOVING TARPS & PROTECTION MATERIALS. USE OF BUILDING TOOLS, EQUIPMENT, TROLLIES, FORKLIFTS, SKIDS, LADDERS, LIFTS,

CRANES ... ETC. ARE NOT PERMITTED.

- 41. ALL TRADES TO FOLLOW BUILDING SERVICE ELEVATIONS STANDARD AS FOLLOW:
- ZONE 1:

   ELECTRIC EMT CONDUITS (POWER, DRAINS & WELDED MECHANICAL PIPING ZONE 1 w/ MINIMUM POSSIBLE LEAKAGE SUPPLY / RETURN DUCTWORK ZONE 2 EXHAUST DUCTWORK MECHANICAL PIPING (CHWS/R, HWS/R. DCW, DHW, CA ..ETC.) COMMUNICATION TRAYS (NETWORK) ZONE 5 FIBER OPTICS ..ETC.) ZONE 5:

  • CLEAR MAINTENANCE & HEAD ROOM
- ZONE MINIMUM OF 8"

**BUILDING STANDARDS - SERVICES ELEVATIONS** 

42. CONTRACTOR AND ALL TRADES TO FOLLOW ALL CAMPUS & CSA/DFL PROCEDURES AT ALL TIMES. CONTRACTOR IS RESPONSIBLE TO DISTRIBUTE ALL PROCEDURES TO ALL HIS WORKERS & SUB-TRADES.

#### MECHANICAL GENERAL NOTES:

- ALL MATERIALS AND WORKMANSHIP SHALL AS A MINIMUM BE IN ACCORDANCE WITH
- THE LATEST EDITION OF THE FOLLOWING: NATIONAL BUILDING CODE

ONTARIO PLUMBING & FIRE CODES

- ONTARIO BUILDING CODE (OBC)
- CAN / CGA B149.1 & .2. ASHRAF 90 1
- ALL OTHER APPLICABLE PROVINCIAL, MUNICIPAL AND SAFETY CODES AND
- CONFIRM ALL PIPING / DUCTWORK DIMENSIONS AND ELEVATIONS ON SITE PRIOR TO INSTALLATION OR ORDERING EQUIPMENT.
- CONTRACTOR TO ARRANGE FOR ALL NECESSARY HOT WORK PERMITS, ALLOW FOR 72 HOURS NOTICE AT LEAST FOR CSA TO ISSUE.
- 4. BE RESPONSIBLE FOR REMOVAL AND REINSTATING CEILINGS AS NECESSARY. USE GLOVES ALL BUILDING HVAC RETURN / EXHAUST GRILLS WITHIN CONSTRUCTION AREA MUST BE
- PROTECTED & FILTERED AT ALL TIMES DURING CONSTRUCTION. PROVIDE DUST SEALS OR TEMPORARY FILTERS ON ALL SUPPLY DIFFUSERS. DO NOT OPERATE HVAC UNTIL FINAL
- 6. USE OF TIE WRAPS, TIE WIRE, PERFORATED BAND, WIRE CHAIN OR SOLID RING TYPE HANGERS IS NOT PERMITTED
- 7. USE OF C-CLAMPS ON STEEL BEAMS IS NOT PERMITTED, USE BEAM CLAMP TO SUPPORT ALL THREADED RODS FROM ALL BEAMS AND OWSJ.
- SEVERAL SYSTEMS OR PART OF SYSTEMS WILL BE SUBJECT TO A SHUT-DOWN PERIOD. BE RESPONSIBLE FOR HAVING ALL NECESSARY TOOLS. MANPOWER AND EQUIPMENT REQUIRED TO MAXIMIZE THE PRODUCTION DURING A SHUT-DOWN. ALL SHUT DOWNS SHALL BE COORDINATED WITH THE OWNER REPRESENTATIVES AND THE ENGINEER WITH A 72 HOURS
- 9. VERIFY THE EXACT LOCATION OF EXISTING SERVICES AND MAINS TO BE TYING-IN, REMOVED OR CAPPED PRIOR TO COMMENCING WORK.
- 10. USE FLAT BOTTOM DUCT TRANSITION PIECES FOR EFFECTIVE DRAINAGE.
- 11. ALL DUCT WORK AND SHEET METAL SHALL BE IN ACCORDANCE WITH S.M.A.C.N.A. LOW VELOCITY SYSTEM.
- 12. SEAL ALL LONGITUDINAL AND CIRCUMFERENCE DUCT JOINTS WITH HIGH VELOCITY DUCT SEALER, "DURO DYNE" OR APPROVED EQUAL.
- 13. AS A MINIMUM PROVIDE 25mm THICK, HEAVY DENSITY, FIBERGLASS INSULATION WITH VAPOR BARRIER AND JACKETING ON ALL PLUMBING PIPING. INSULATE THE LAST 10 FEET FROM OUTSIDE OF ALL EXHAUST & FRESH AIR INTAKE DUCTWORK WITH 40mm FIBERGLASS WRAP. ALL INSULATION JOINTS TO BE STAGGERED. PROVIDE REMOVABLE INSULATION
- 14. ALL EXPOSED JACKETING TO BE 0.016" ALUMINUM, PEBBLED (STUCCO) FINISH.

JOINTS AT ALL VALVES & UNIONS

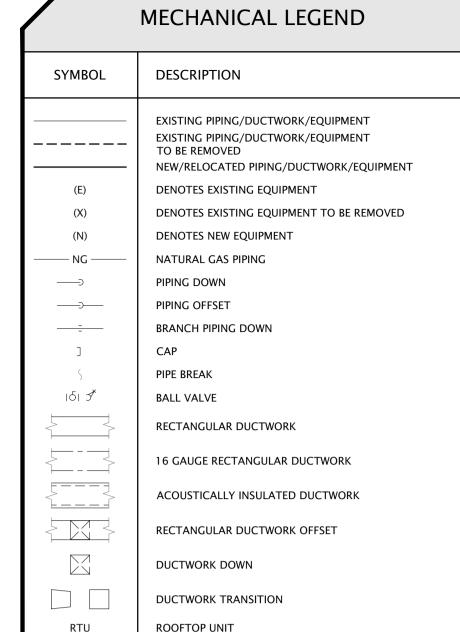
- 15. PROVIDE 300mm INSULATION PROTECTION GALVANIZED SHIELD / SADDLE PLATES WITH LOCK TABS AT EACH PIPE HANGER LOCATION.
- 16. ALL PIPING TO BE PRESSURE TESTED FOR A MINIMUM OF 24 HOURS AND IN ACCORDANCE WITH THE CODE REQUIREMENTS, DO NOT CONCEAL OR INSULATE ANY PIPING UNTIL TESTED & REVIEWED BY ENGINEER.
- 17. PROVIDE FIRE DAMPERS ON ALL DUCTS OR AIR TRANSFER OPENINGS PENETRATING A BUILDING FIRE SEPARATION.
- 18. FLEXIBLE DUCTS SHALL BE LIMITED TO A MAXIMUM LENGTH OF 6 FEET AND MINIMUM DIAMETER OF 150mm 19. ALL HVAC CONTROLS AND WIRING SHALL BE SIZED, SELECTED BY A SPECIALIZED
- CONTROLS SUB-TRADE IN FULL ACCORDANCE WITH EQUIPMENT MANUFACTURER
- 20. ISOLATE COPPER PIPE FROM HANGER OR OTHER PIPING WHERE ELECTROLYTIC ACTION 21. VENT AND PRIME ALL P-TRAP FIXTURES IN ACCORDANCE WITH THE ONTARIO LATEST

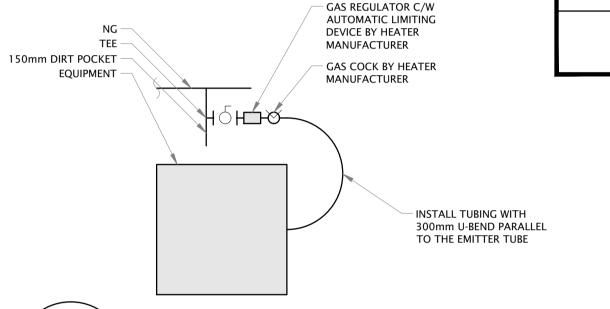
EDITION PLUMBING CODE. USE AUTOMATIC PRIMERS "ANCON" OR "ZURN" AT ALL NEW &

EXISTING FLOOR DRAINS. ALL FIXTURES VENTS TO BE CONNECTED TO BUILDING COMMON

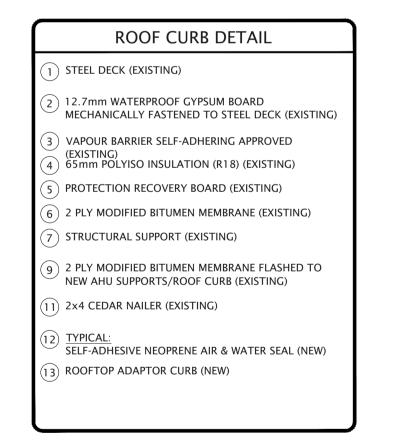
- 22. APPROVED PLUMBING ACCESSORIES & VALVES: ANCON, ZURN, WATTS & CRANE.
- 23. ALL DRAINAGE AND VENT PIPING TO BE CAST IRON WITH MJ JOINTS OR DWV COPPER AS
- RATED BY MANUFACTURERS FOR RETURN AIR PLENUM USE AND APPROVED BY CODE. 24. ALL PLUMBING PIPING SHALL BE TYPE "L" NEW COPPER WITH LEAD FREE SOLDERED JOINTS. USE ONLY STRAIGHT COPPER RUNS, COPPER COILS OF ANY SIZE ARE NOT PERMITTED.
- 25. ALL TEMPERATURE & PRESSURE GAUGES TO BE 125mm DIAL SIZE. STAINLESS STEEL & GLYCERIN FILL. USE THERMO WELLS ON ALL TEMPERATURE GAUGES.
- 26. USE VMC KORFUND MAXI-FLEX NEOPRENE MOUNTING FLOOR PADS ON ALL HEAVY EQUIPMENT TO ISOLATE VIBRATION & PROTECT FLOORING. GRADE / COLOR TO MACH
- 27. USE ARMSTRONG CBV FOR ALL CIRCUIT BALANCING VALVES.
- 28. CONTRACTOR TO PROVIDE FULL DRAWINGS, SKETCHES & SPECIFICATIONS FOR ALL PROPOSED SERVICES SUPPORTS, ANCHORS & HANGERS UNDER THIS PROJECT SCOPE FOR PROJECT MANAGER APPROVAL BEFORE COMMENCING ANY WORK.
- 29. CONTRACTOR TO SUPPORT ALL SERVICES SHOWN ON PROJECT SCOPE FROM BUILDING

- STRUCTURAL MEMBERS, SUPPORT ALL MECHANICAL PIPING USING CLEVIS HANGERS AT ADEQUATE SPACING TO INSURE NO SAG OR FAILURE OF JOINTS, ADEQUATELY BRACE PIPING AND ALLOW FOR EXPANSION OR CONTRACTION. PROVIDE EXPANSION LOOPS OR IOINTS SIZED TO COMPENSATE FOR CHANGES IN PIPE LENGTH CAUSED BY A TEMPERATURE DIFFERENTIAL OF 65°C FOR TYPICAL BUILDING SYSTEMS AND 200°C FOR LAB SPECIAL SYSTEMS. ALL SUPPORTS & HANGERS TO BE HOT DIPPED GALVANIZED OR ZINC ELECTROPLATED.
- 30. CONTRACTOR TO PROVIDE FULL SYSTEM OF SUPPORTS AND HANGERS COMPLETE WITH ALL NECESSARY BRACKETS, BASE PLATES, INSERTS, FASTENERS, RODS AND ALL OTHER ACCESSORIES IN ACCORDANCE WITH MSS SP-58 AND TO MATCH EXISTING BUILDING SUPPORTS. ALL SUPPORTS & HANGERS TO BE E. MYATT, ITT GRINNELL OR APPROVED
- 31. CONTRACTOR TO TEMPORARILY SUPPORT ALL REMAINING PIPING LEFT AFTER DEMOLITION OR MODIFICATION UNTIL NEW PIPING & BRANCHES ARE TIED IN & INSTALLED AND FINAL PERMANENT SUPPORTS ARE IN PLACE.
- 32. LABEL ALL PIPING, EQUIPMENT & DUCTWORK WITH REFERENCE TO THEIR SERVICE AND LOCATION LISE WILL BRADY LARELS STYLE R-946 VINYLEUM 50mm WIDE MATCH BUILDING IDENTIFICATION / LABELING SYSTEM AS FOLLOW: 32.1. WHITE LETTERS & ARROWS ON GREEN TAPE
  - 32.1.1. CHILLED WATER SUPPLY & RETURN 32.1.2. DRAINAGE, SANITARY, STORM & VENTS
- 32.1.3. HVAC SUPPLY & RETURN. EXHAUST AIR & FRESH AIR INTAKE DUCTWORK 32.2. BLACK LETTERS & ARROWS ON YELLOW TAPE: 32.2.1. HEATING WATER SUPPLY & RETURN 32.2.2. STEAM PIPING



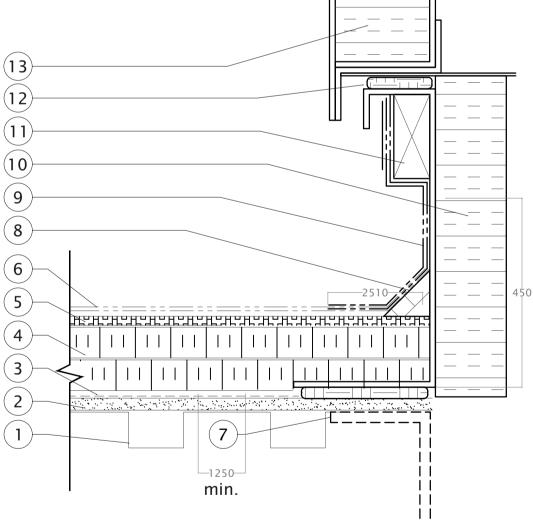


NATURAL GAS CONNECTION DETAIL



Scale: NTS





RTU **ROOFTOP UNIT** 

> 02 project

PHASE 2 RTU 1, 2, 3 REPLACEMENT

**ADDRESS** 

Agence spatiale

**Building and Energy Engineers** 

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Contractor to verify all dimensions &

the engineer of all discrepancies.

conditions on site and immediately notify

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Issued for Review

description

no. du detail

B location drawing n

sur dessin no.

2017.08.09

017.06.28

date

copies and electronic files must be

project authority.

project authority.

ÉRIC VACHON

M. FARID, P. Eng.

Director, Security & Facilities

Project Manager

dessir MECHANICAL GENERAL NOTES, LEGEND, SCHEDULES & DETAILS

Designed By Conçu par J.ALEXANDER (yyyy/mm/dd) Drawn By Dessiné par (yyyy/mm/dd) Examiné par Reviewed By J.ALEXANDER (yyyy/mm/dd) Approved By Approuvé par J.ALEXANDER (yyyy/mm/dd) Tender Soumission M. FARID Project Manager Administrateur de projets Project no. No. du projet CSA15-M7b

Drawing no

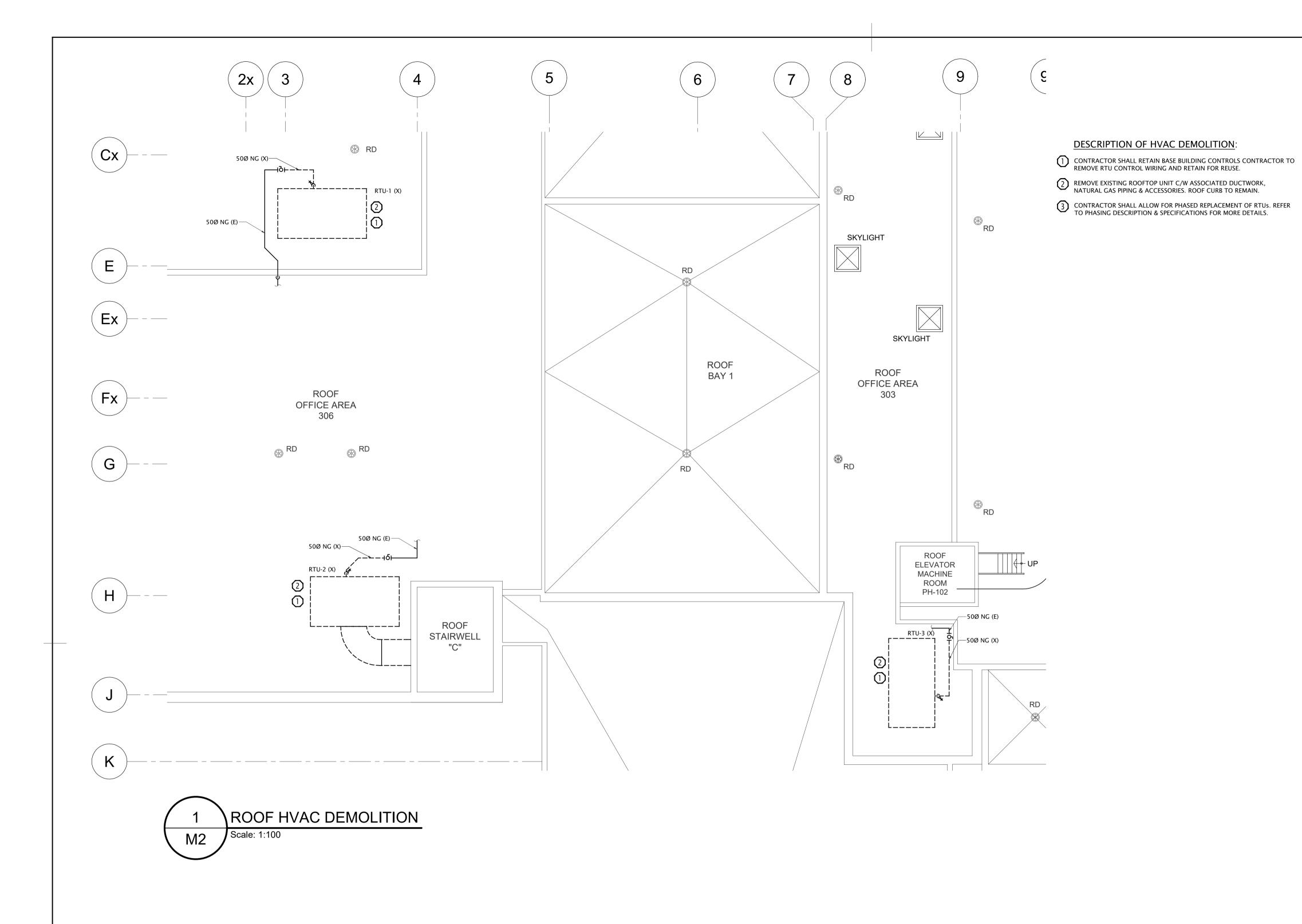
2016-065

No. du dessin

AIR HANDLING UNIT SCHEDULE (AIR HANDLING UNITS SUPPLIED BY DEPARTMENTAL REPRESENTATIVE)

		<b>(</b>															
TAG LOCATION			OUTDOOR	OUTDOOR	ITDOOR	SUPPLY FAN			COOLING DATA (DX)		HEATING DATA	EATING DATA (NATURAL GAS)		TRICAL DATA	PHYSICAL		
	TAG LOCATION	AIR CAPACITY (L/S)	AIR APACITY FILTER	CAPACITY (L/S)	EXTERNAL STATIC PRESSURE (Pa)	POWER (kW)	NET COOLING CAPACITY (kW)	NET SENSIBLE COOLING CAPACITY (kW)	REFRIGERANT TYPE	INPUT CAPACITY (kW)	OUTPUT CAPACITY (kW)	V/Ø/Hz	FLA/MCA/MOP	DIMENSIONS WxLxH (mmxmmxmm	WEIGHT (KG) )	REMARKS	
Ī	RTU-1	ROOF	755	50mm MERV 8, 50mm MERV 13	3773	373	3.8	74	66	R410A	102	82	575/3/60	49/52/60	4191x2388x1855	2096	OUTDOOR PACKAGED RTU, VAV TYPE, PROVIDED BY CONTRACTOR, VERTICAL RETURN INLET & SUPPLY DISCHARGE
	RTU-2	ROOF	566	50mm MERV 8, 50mm MERV 13	2830	373	3.8	70	56	R410A	102	82	575/3/60	49/52/60	4191x2388x1855	2096	OUTDOOR PACKAGED RTU, VAV TYPE, FILTERS SUPPLIED BY DEPARTMENTAL REPRESENTATIVE, VERTICAL RETURN INLET & SUPPLY DISCHARGE
	RTU-3	ROOF	660	50mm MERV 8, 50mm MERV 13	3301	435	5.6	72	61	R410A	102	82	575/3/60	49/52/60	4191x2388x1855	2096	OUTDOOR PACKAGED RTU, VAV TYPE, FILTERS SUPPLIED BY DEPARTMENTAL REPRESENTATIVE, VERTICAL RETURN INLET & SUPPLY DISCHARGE

1. RTU SUPPLIED BY DEPARTMENTAL REPRESENTATIVE. INSTALLED BY THIS CONTRACTOR.



Canadian Space Agency

Agence spatiale canadienne

ÉRIC VACHON Director, Security & Facilities

M. FARID, P. Eng. Project Manager







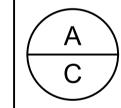
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03	Re-Issued for Permit/Tender	2020.05.22
02	Issued for Permit/Tender	2017.08.09
01	Issued for Review	2017.06.28
revisions	description	date



B location drawing no sur dessin no.

PHASE 2 RTU 1, 2, 3 REPLACEMENT

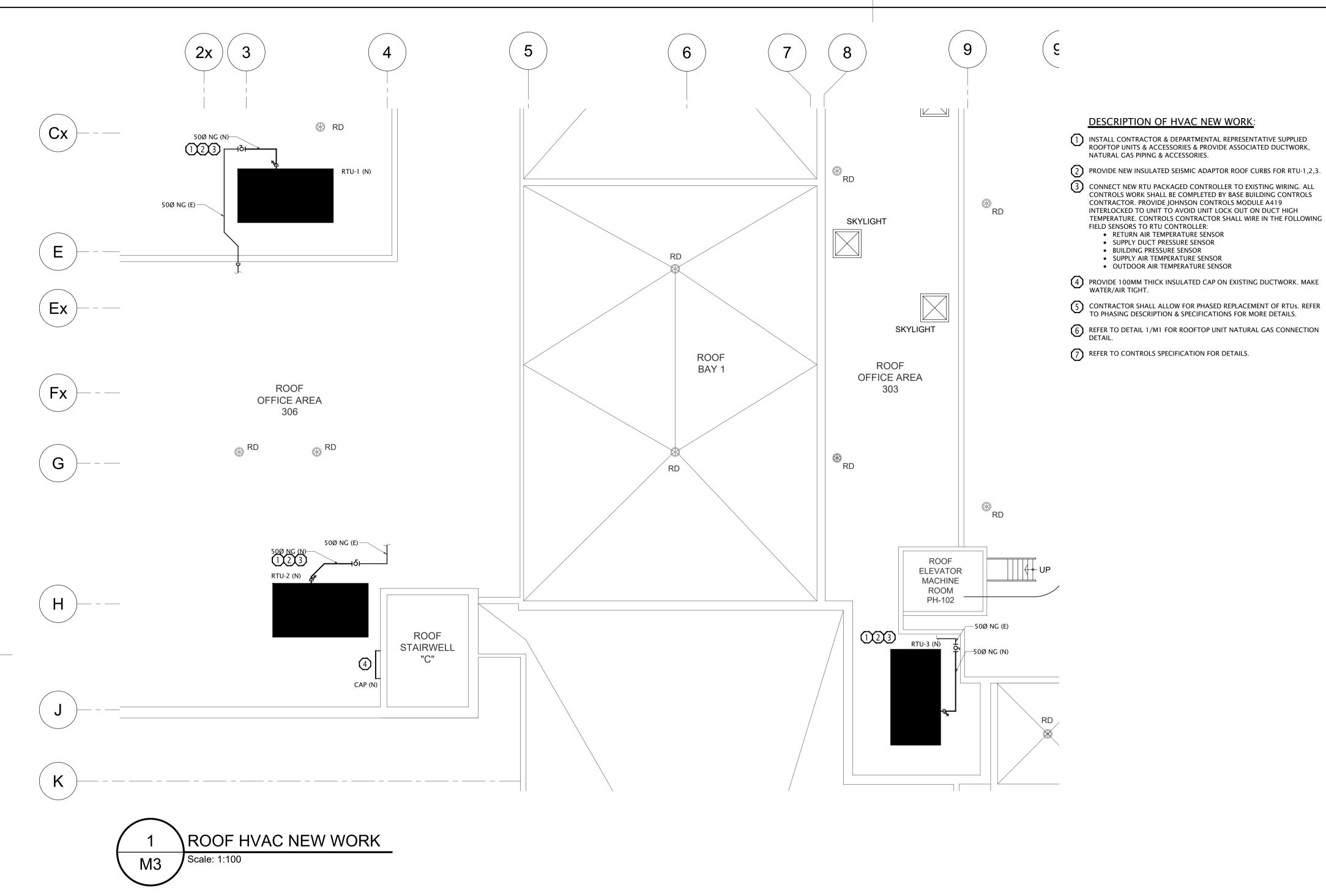
**ADDRESS** 

ROOF LEVEL HVAC DEMOLITION

Designed By	J.ALEXANDER	Conçu par
Date	J.ALEXANDER	(yyyy/mm/dd)
Drawn By		Dessiné par
Date	R.CAMERON	(yyyy/mm/dd)
Reviewed By	LALEVANDED	Examiné par
Date	J.ALEXANDER	(yyyy/mm/dd)
Approved By		Approuvé par
Date	J.ALEXANDER	(yyyy/mm/dd)
Tender		Soumission
	M. FARID	
Project Manager	Adr	ministrateur de projets
Project no.	0045 14	No. du projet

CSA15-M7b

No. du dessin



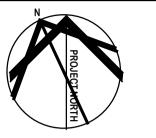
- INSTALL CONTRACTOR & DEPARTMENTAL REPRESENTATIVE SUPPLIED ROOFTOP UNITS & ACCESSORIES & PROVIDE ASSOCIATED DUCTWORK, NATURAL GAS PIPING & ACCESSORIES.
- PROVIDE NEW INSULATED SEISMIC ADAPTOR ROOF CURBS FOR RTU-1,2,3.
- ONNECT NEW RTU PACKAGED CONTROLLER TO EXISTING WIRING. ALL CONTROLS WORK SHALL BE COMPLETED BY BASE BUILDING CONTROLS CONTRACTOR. PROVIDE JOHNSON CONTROLS MODULE A419 INTERLOCKED TO UNIT TO AVOID UNIT LOCK OUT ON DUCT HIGH
- CONTRACTOR SHALL ALLOW FOR PHASED REPLACEMENT OF RTUS. REFER TO PHASING DESCRIPTION & SPECIFICATIONS FOR MORE DETAILS.

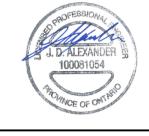


Agence spatiale canadienne

ÉRIC VACHON Director, Security & Facilities

M. FARID, P. Eng. Project Manager







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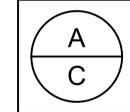
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revisions	description	date



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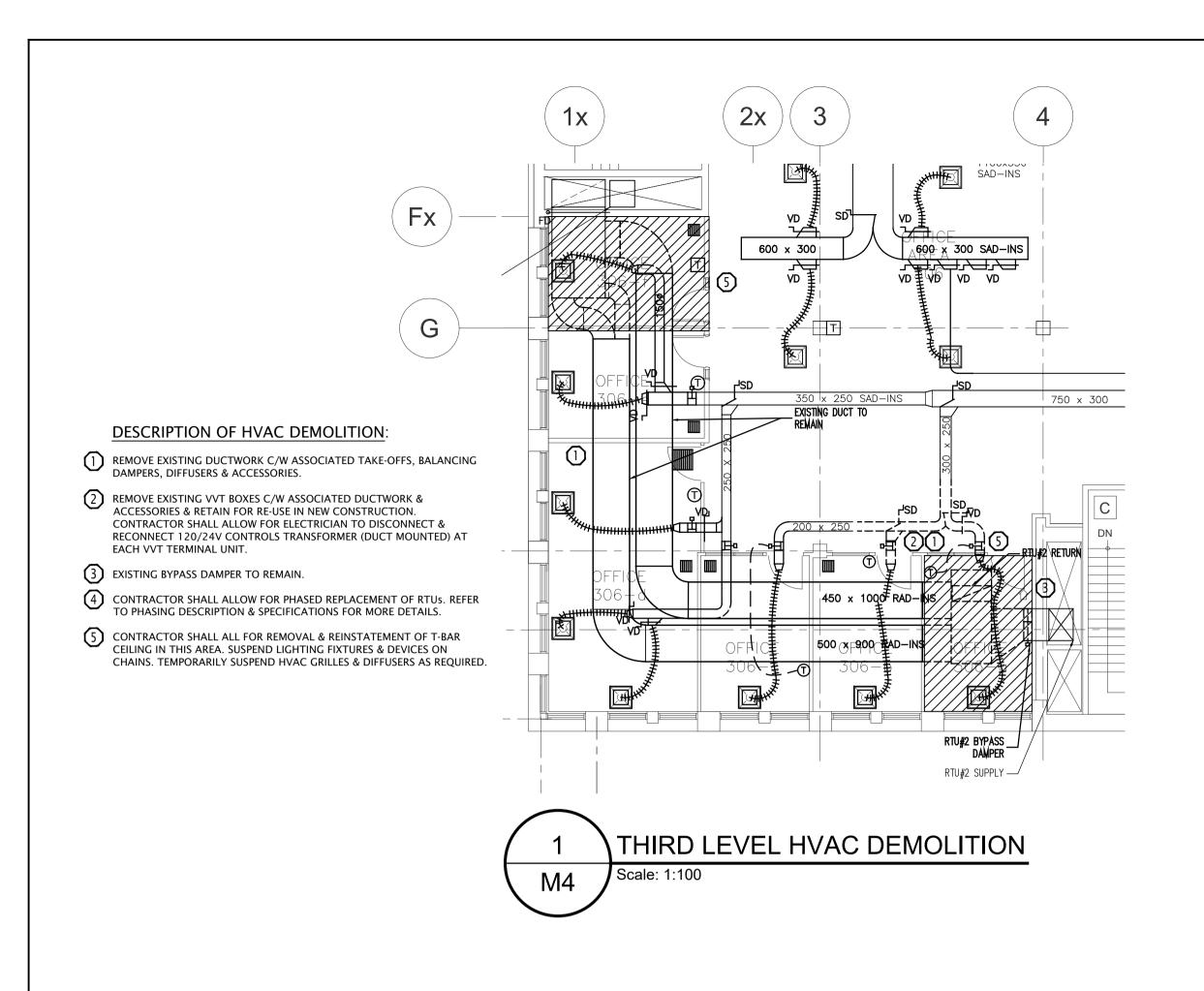
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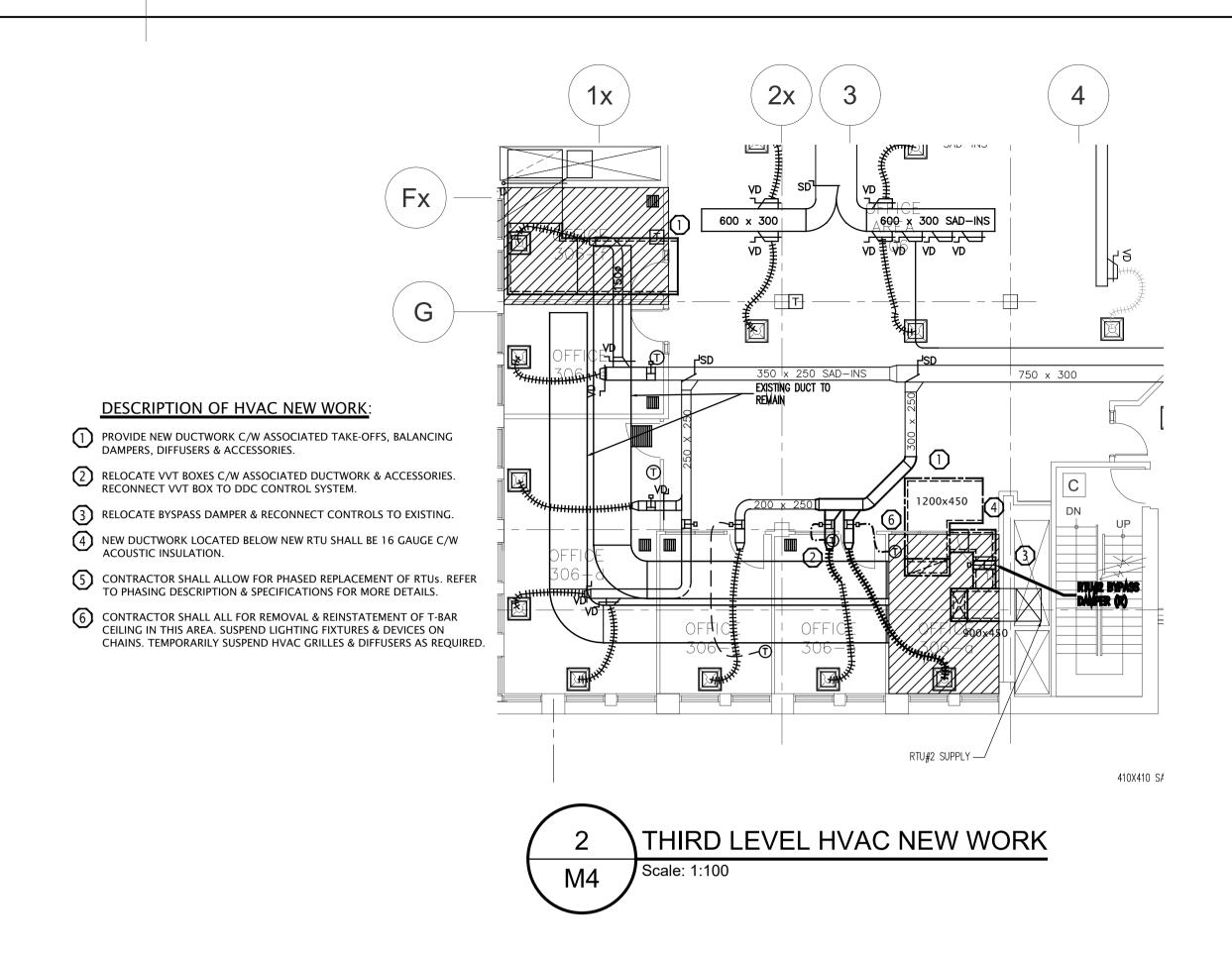
**ADDRESS** 

ROOF LEVEL HVAC NEW WORK

	Designed By	J.ALEXANDER	Conçu par
	Date	J.ALLANDLIX	(yyyy/mm/dd)
	Drawn By	DOMEDON	Dessiné par
	Date	R.CAMERON	(yyyy/mm/dd)
	Reviewed By	J.ALEXANDER	Examiné par
	Date	J.ALEXANDER	(yyyy/mm/dd)
	Approved By	LALEVANDED	Approuvé par
	Date	J.ALEXANDER	(yyyy/mm/dd)
	Tender		Soumission
		M. FARID	
	Project Manager	Adminis	trateur de projets
	Project no.	00045 N471	No. du projet

CSA15-M7b



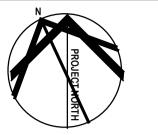


Canadian Space Agency Agence spatiale canadienne

ÉRIC VACHON

Director, Security & Facilities

M. FARID, P. Eng.







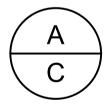
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revisions	description	date



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 B location drawing no.
 sur dessin no.

C drawing no.
 dessin no.

iect

PHASE 2 RTU 1, 2, 3 REPLACEMENT

ADDRESS

9

THIRD LEVEL
HVAC DEMOLITION
& NEW WORK

Designed By	J.ALEXANDER	Conçu par
Date	J.ALEXANDER	(yyyy/mm/dd)
Drawn By		Dessiné par
Date	R.CAMERON	(yyyy/mm/dd)
Reviewed By	LALEVANDED	Examiné par
Date	J.ALEXANDER	(yyyy/mm/dd)
Approved By		Approuvé par
Date	J.ALEXANDER	(yyyy/mm/dd)
Tender		Soumission
	M. FARID	
Project Manager	Administr	ateur de projets
Project no.	0045 1471	No. du projet

ect no. No. du pro CSA15-M7b

awing no.

No. du dessin

С

#### DFL PROJECTS GENERAL NOTES, & PROCEDURES:

- 1. THE GENERAL CONTRACTOR SHALL ARRANGE AND PAY FOR ALL NECESSARY PERMITS, INSPECTIONS & RE-INSPECTIONS REQUIRED TO BE PERFORMED BY LOCAL AUTHORITIES HAVING JURISDICTION INCLUDING INSPECTION AND TESTING EXCEPT FOR BUILDING PERMIT TO THE CITY OF OTTAWA WHICH WILL BE APPLIED FOR BY OWNER. TURN OVER TO THE OWNER ALL ORIGINAL APPROVAL DOCUMENTATION & CERTIFICATES.
- CONTRACTOR TO BE RESPONSIBLE FOR THE PROVISION (SUPPLY AND INSTALLATION) OF ALL MATERIALS, EQUIPMENT & SERVICES SHOWN ON THE PROJECT DRAWINGS & SPECIFICATIONS AS REQUIRED FOR A FULLY OPERABLE SYSTEM, UNLESS CHANGED OR REPLACED BY REVISED DRAWINGS, SPECIFICATIONS OR ADDENDA.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING & FIRE PROTECTION WORK. BE RESPONSIBLE FOR ALL FLOOR CUTTING, CORE DRILLING, ALL CHASES, OPENINGS AND PATCHING AS MAY BE REQUIRED BY ALL SUB TRADES WHO MAY OR MAY NOT BE UNDER HIS
- 1. DRAWINGS ARE NOT INTENDED TO SHOW THE DETAILS & ROUTE OF EACH COMPONENT TO BE INSTALLED OR REMOVED. THEY ARE ONLY PROVIDING A GENERAL OVERVIEW OF THE PROJECT SCOPE. THE CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW THE SITE CONDITIONS DURING THE TENDER PERIOD AND EXAMINE THE EXTENT OF THE DEMOLITION, REMOVALS & NEW INSTALLATIONS TO INCLUDE IN THE TENDER PRICE ALL NECESSARY LABOR AND MATERIAL REQUIRED FOR A FULLY OPERABLE SYSTEM AS INTENDED.
- 5. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT CODES, BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES WHERE VARIED BY THE PROJECT SPEC.
- 6. ALL DIMENSIONS TO BE VERIFIED ON SITE. EXACT LOCATION & ELEVATION OF EQUIPMENT IS SUBJECT TO SITE MEASUREMENTS.
- 7. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR ALL MATERIAL, EQUIPMENT & FIXTURES TO ENGINEER FOR APPROVAL BEFORE COMMENCING INSTALLATION OR ORDERING. ALL SAMPLES TO BE PROVIDED UPON CSA REQUEST AT NO
- 8. ALL SUPPLIED MATERIALS, FIXTURES & EQUIPMENT TO BE NEW, FREE FROM DEFECTS, CERTIFIED & APPROVED BY CODE. REUSE OF ANY EXISTING PARTS IN SOT PERMITTED UNLESS APPROVED BY OWNER.
- 9. CSA SHALL BE GIVEN THE OPTION OF RETAINING ANY REMOVED COMPONENTS OR EQUIPMENT. COORDINATE AND HAND OVER TO CSA PROJECT MANAGER AS REQUIRED. DISPOSE OF ANY REMAINING OR UNWANTED EQUIPMENT OR SERVICES AND REMOVE OFF SITE IN A LEGAL MANNER AND COMPLY WITH THE ENVIRONMENTAL PROTECTION ACT, ONTARIO REGULATIONS FOR WASTE MANAGEMENT PROGRAM. CERTIFICATE OF DISPOSAL TO BE HANDED OVER TO OWNER AFTER REMOVALS ARE DONE.
- 10. INSTALL ALL EQUIPMENT IN FULL ACCORDANCE WITH THE MANUFACTURER SPECIFICATIONS & RECOMMENDATIONS.
- 11. ALL TRADES SHOULD BE LICENSED TO PERFORM ALL WORK SHOWN ON THE DRAWINGS INCLUDING REMOVALS &
- 12. DO NOT DAMAGE EXISTING FIRE SEPARATIONS AND FIRE PROTECTIONS IN THE PROJECT AREAS. ANY DAMAGES INCURRED TO EXISTING FIRE SEPARATIONS AND PROTECTIONS SHALL BE RESTORED TO APPROVED CONDITIONS TO MEET REQUIRED RATING AND CODES AT NO ADDITIONAL COSTS TO THE PROJECT
- 13. UNDER ANY CIRCUMSTANCES, DO NOT BLOCK REQUIRED ACCESS TO EXITS AND FIRE ESCAPE ROUTES DURING THE PROJECT DURATION. ALL EXISTING LIFE SAFETY SYSTEMS AND INDICATORS SHALL BE OPERATIONAL AT ALL TIMES.
- 14. SMOKE EATERS & POWERED EXHAUST FANS VENTED TO OUTSIDE OF BUILDING MUST BE USED DURING ALL BRAZING / WELDING / SOLDERING / CUTTING / GRINDING ACTIVITIES TO MINIMIZE CONTAMINATION & ODOR TO ADJACENT AREAS PARTICULARLY IN CLEAN ROOMS. PROVIDE 72 HOUR NOTICE TO CSA TO ARRANGE FOR HOT WORK PERMITS.
- 15. CONTRACTOR TO PROTECT ALL ARCHITECTURAL FINISHES & FLOORING DURING CONSTRUCTION, BE RESPONSIBLE FOR ANY DAMAGES TO EXISTING SURFACES RESULTING FROM ALL PROJECT'S WORK. THE CONTRACTOR SHALL MAKE GOOD ALL DAMAGED SURFACES INCLUDING ANY PAINT TOUCH-UPS REQUIRED. REPAIR ALL WALLS, FLOORS & CEILINGS IN CORE AREA WHERE MECHANICAL & ELECTRICAL SERVICES PASS THROUGH.
- 16. EXACT TARPING LIMITS AND ACCESS ROUTES TO BE DETERMINED ON SITE IN COORDINATION WITH CSA PROJECT MANAGER.
- 16.1. ALL TARPS TO BE NEW HEAVY DUTY POLYETHYLENE, WATER / MILDEW / TEAR RESISTANT, WHITE, TIGHT SEALED FROM DECK TO FLOOR, CONTRACTOR TO PROVIDE ACCESS ZIPPERS OR DOORS AS REQUIRED BY CSA, USE METAL STUDS AS FRAMING SUPPORTS, NO WOOD MATERIALS TO BE USED IN TARPS CONSTRUCTION UNLESS APPROVED
- 16.2. APPROVED METHODS TO ATTACH STUDS / TARPS TO BUILDING AS FOLLOW: 16.2.1. ON FLOORS: HEAVY DUTY COMMERCIAL DOUBLE SIDED TAPE TO SECURE METAL STUDS TO FLOORS, USE
  - OF SCREWS OR TAPCONS ARE NOT PERMITTED. 16.2.2. ON DRYWALLS / MASONRY / METAL SIDING WALLS: DUCT OR TUCK TAPE IS NOT ALLOWED DIRECTLY ON BUILDING FINISHES AS IT WILL DAMAGE THEM WHEN REMOVED; APPLY MASKING PAINT GREEN TAPE FIRST AND THEN DUCT / TUCK TAPE ON TOP OF IT. STUDS CAN BE SCREWED TO DRYWALL / MASONRY WALLS GIVING THAT ALL HOLES WILL BE PATCHED & PAINTED (WHOLE WALL / AREA TO BE PAINTED, SMALL /
- LOCAL PAINT PATCHES ARE NOT PERMITTED) 16.3. TARPS COULD BE HANGED OFF BUILDING STEEL STRUCTURAL USING HIGH STRENGTH CABLE TIES, PROVIDE HEAVY GAUGE UNISTRUTS AS NEEDED FOR CROSS RUNS OR TO DISTRIBUTE TARPS LOAD.
- 16.4. HANGING TARPS FROM BUILDING SERVICES (DUCTWORK, CONDUITS, PIPES, SUPPORTS, HANGERS ... ETC.) IS NOT
- 16.5. CONTRACTOR IS RESPONSIBLE FOR CLEANING, PATCHING, REPAIRING & PAINTING ALL DAMAGED SURFACES & TAPE MARKS AFTER REMOVING TARPS
- PROVIDE FLOOR PROTECTION TO ENTIRE PROJECT AREAS AS FOLLOW

INCLUDING CAMPUS CAFETERIA

- 17.1. FLOOR TO BE WIPED CLEAN FROM ANY DEBRIS OR DUST PARTICLES. 17.2. PROVIDE MIN. 1/8" FOAM LAYER DIRECTLY ON ALL FLOORING.
- 17.3. PROVIDE HARD SHEETS ON TOP OF FOAM LAYER, ALL SHEETS SEAMS TO BE DUCT-TAPED TO PREVENT DEBRIS / 7. IF ANY DISCREPANCY OCCURS ON THE ENGINEER'S DRAWINGS, THE CONTRACTOR SHALL, DURING TENDERING, DUST FROM GETTING TRAPPED UNDER THE PROTECTION SHEETS. USE OF OSB SHEETS IS NOT PERMITTED
- 18. PROVIDE FURNITURE AND EQUIPMENT PROTECTION AS FOLLOW: 18.1. OFFICE / LAB FURNITURE AND EQUIPMENT: TO BE COMPLETELY COVERED AND WRAPPED WITH NEW HEAVY DUTY
- 18.2. SENSITIVE LAB TESTING EQUIPMENT: TO BE COMPLETELY COVERED AND WRAPPED WITH NEW HEAVY DUTY CLEAR PLASTIC ROLL SHEETS. CLEAN SCAFFOLDING TO BE ERECTED ON TOP OF ALL LAB EQUIPMENT TO PROTECT FROM
- POSSIBLE FALLING OBJECTS.
- 19. CONTRACTOR TO PROVIDE BILINGUAL CONSTRUCTION, ACCESS & SAFETY SIGNAGE, SIGNS TO BE POSTED ON ALL PROJECT FENCES & ENTRANCES AT THE START OF PROJECT AND BEFORE COMMENCING ANY WORK.
- 20. ACCESS TO THE SITE FOR MATERIAL. WORK FORCES AND FOR WASTE REMOVAL IS TO BE COORDINATED WITH CSA PROJECT MANAGER, USE ONLY ELEVATORS DESIGNATED BY CSA AND PROTECT THEM FROM DAMAGE.
- 21. WHEN TESTING ACTIVITIES ARE NOT UNDERWAY, LARGE OR SMALL LOADING DOCKS CAN BE USED TO MOVE MATERIALS IN AND OUT OF THE BUILDING FROM 7:00 AM TO 8:00 AM WITHOUT CSA NEEDING TO PROVIDE NOTICE TO BUILDING STAFF. IF ACCESS IS REQUIRED AFTER THIS TIME OR FOR LONGER PERIODS, 72 HOUR NOTICE MUST BE PROVIDED TO CSA TO CONFIRM AVAILABILITY AND ARRANGE FOR PROPER NOTICES
- 22. SANITARY FACILITIES WILL BE ASSIGNED FOR CONTRACTOR'S PERSONNEL. OTHERS SHALL NOT BE USED. KEEP
- 23. ONLY DESIGNATED AREAS ARE TO BE USED FOR LUNCH AND BREAK TIME. ALL OTHER AREAS ARE OFF LIMITS
- 24. CONTRACTOR TO RESPECT ALL BUILDING FLOOR LOADING LIMITATIONS, COORDINATE AND CONFIRM WITH CSA
- PROJECT MANAGER PRIOR TO BRING IN ANY HEAVY TOOLS, EQUIPMENT AND LIFTS.
- 25.1. CLEAN AND REMOVE ALL DEMOLITION AND CONSTRUCTION WASTE FROM PROJECT SITE ON DAILY BASIS AND
- UPON COMPLETION OF PROJECT 25.2. DO NOT USE CSA WASTE CONTAINERS. AN AREA WILL BE DESIGNATED FOR LOCATING CONTRACTOR WASTE BINS. 25.3. CONTRACTOR TO PROVIDE ALL CLEANING EQUIPMENT & SUPPLIES, USE OF BUILDING CLEANING EQUIPMENT OR

25. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO KEEP THE OWNER'S ACCESS AREAS AND CORRIDORS CLEAN AT ALL

- SUPPLIES ARE NOT PERMITTED 26. DO NOT SUBJECT ANY PART OF THE BUILDING TO ANY NOISE, DUST OR ANY OTHER UNACCEPTABLE ENVIRONMENTAL CONDITIONS DURING THE COURSE OF THE PROJECT. ANY NOISY / DUSTY / SMELLY ACTIVITIES SHALL BE DONE AFTER
- REGULAR WORKING HOURS OR WEEKENDS. COORDINATE WITH CSA PROIECT MANAGER WITH A MINIMUM NOTICE OF 72 27. ALL PENETRATIONS THROUGH WALLS AND FLOORS SHALL BE SAW-CUT OR CORE DRILLED. JACK HAMMERING IS NOT
- PERMITTED. ALL WALLS, FLOORS & CEILINGS PENETRATIONS TO BE SEALED BY CONTRACTOR IN ACCORDANCE WITH APPLICABLE CODES & THE ENGINEER'S REQUIREMENTS.
- 28. PARTS NOTED TO BE SUPPLIED BY OWNER SHALL BE FULLY INSTALLED & SUPPORTED BY CONTRACTOR AT NO

CONSTRUCTION AT ALL TIMES AND ARE SUBJECT TO VERIFICATION.

- 29. PROJECTS MAY TAKE PLACE IN A CLEANROOM ENVIRONMENT, MANDATING SPECIAL MEASURES BE TAKEN TO REDUCE LABORATORY DISRUPTION, CLASS 8 CLEANROOM STANDARDS ARE TO BE MET FOR THE AREA SURROUNDING
- 30. ALL PERSONNEL MUST ATTEND MANDATORY DFL BRIEFING ON THE FIRST DAY OF PROJECT AND BEFORE STARTING ANY WORK. ADHERE TO THE INFORMATION PRESENTED AT ALL TIMES. ANY PERSON WHO DID NOT ATTEND THIS BRIEFING WILL NOT BE ALLOWED TO WORK ON SITE - NO EXCEPTIONS
- 31. IMPROPER / UNCLEAN / RIPPED CLOTHING, FOUL LANGUAGE, IMPROPER BEHAVIOR, SMOKING IN UNDESIGNATED AREAS INCLUDING E-CIGARETTES WILL NOT BE TOLERATED AND WORKER WILL BE ESCORTED OFF CAMPUS IMMEDIATELY - NO
- 32. CSA, AT THEIR DISCRETION, MAY REQUEST A WORKER TO LEAVE THE SITE IF THERE IS DEMONSTRATED IMPAIRED MENTAL OR PHYSICAL CAPABILITY AFFECTING HIS/HER WORK PERFORMANCE AND POSSIBLY PUTTING OTHERS AT RISK DUE TO CONSUMPTION OF ALCOHOL OR ILLEGAL SUBSTANCES.
- 33. DFL IS A HIGH PROFILE OCCUPIED BUILDING, USE OF MUSIC OR RADIO ON SITE IS NOT PERMITTED AT ALL TIMES.
- 34. ALL GC & SUB-TRADES WORKERS HAVE TO BE ESCORTED AT ALL TIMES WHILE IN BUILDING AND ON CAMPUS. 34.1. CSA WILL PROVIDE SECURITY COMMISSIONAIRES TO ESCORT. 34.2. PRIOR TO PROJECT START, GC TO PROVIDE A FULL LIST OF ALL PERSONNEL WORKING ON THE PROJECT AS WELL AS ENGINEERS, SUPPLIERS & INSPECTORS IF POSSIBLE TO ISSUE NECESSARY FORMS FOR SITE AND BUILDING
- 34.3. PROVIDE AT LEAST 72 HOUR NOTICE FOR ANY ADDITIONAL NAMES OR FOR AFTER HOURS OR WEEKEND WORK. 34.4. NOTIFY CSA IMMEDIATELY OF ANY CHANGE IN SCHEDULE THAT AFFECTS THE NEED FOR SECURITY ESCORTS. 34.5. INDIVIDUALS WHO ARE NOT ON THAT LIST WILL BE DENIED ACCESS WITH NO EXCEPTIONS.

- 35. GENERAL CONTRACTOR REPRESENTATIVE HAS TO BE PRESENT ON SITE AT ALL TIMES AND ACCOMPANY ALL SUB-TRADE WORKERS; SUB-TRADES ARE NOT ALLOWED TO BE ON SITE OR TO WORK WITHOUT THE PRESENCE OF GC - NO
- 36. WEEKEND AND/OR AFTER-HOURS SHUTDOWNS TO BE SCHEDULED IN AGREEMENT WITH CSA PROJECT MANAGER. PROVIDE AT LEAST 72 HOUR NOTICE IN ADVANCE.
- 37. CSA IS COMMITTED TO ENSURING A HEALTHY AND SAFE ENVIRONMENT FOR ITS EMPLOYEES, CONTRACTORS AND VISITORS AND WILL ALIGN ITSELF WITH CONTRACTORS WHO SHARE IN THIS VISION.
- 37.1. THE REQUIREMENTS OUTLINED BELOW ARE PROVIDED AS REFERENCE AND ARE THERE TO ASSIST THE CONTRACTING COMPANY WHO PERFORMS THE WORK AND ACCEPTS THIS COMMITMENT COMPLETELY: 37.1.1. ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT: HTTP://WWW.E-LAWS.GOV.ON.CA
  - 37.1.2. INFRASTRUCTURE HEALTH AND SAFETY ASSOCIATION "GUIDE TO DEVELOPING HEALTH AND SAFETY POLICIES AND PROGRAMS IN CONSTRUCTION" A COMPREHENSIVE GUIDE GEARED TO MID- TO LARGE-SIZED GENERAL CONTRACTORS FOR DEVELOPING AND IMPLEMENTING AN EFFECTIVE HEALTH AND SAFETY PROGRAM: HTTP://WWW.IHSA.CA
- 37.1.3. INFRASTRUCTURE HEALTH AND SAFETY ASSOCIATION "CONSTRUCTION HEALTH AND SAFETY MANUAL" GUIDANCE ON HAZARD CONTROLS FOR ONTARIO CONTRACTORS: HTTP://WWW.IHSA.CA 37.2. THE GENERAL CONTRACTOR WILL BE REQUIRED TO PREPARE AND SUBMIT TO THE CSA PROJECT MANAGER A FULL PROJECT HEALTH AND SAFETY PLAN, HEREIN CALLED PHSP, PRIOR TO THE COMMENCEMENT OF ANY WORKS AND WITHIN 2 WEEKS OF CONTRACT AWARD.
- 37.3. THE GENERAL CONTRACTOR SHALL PROVIDE CSA PROJECT MANAGER A COPY OF ALL NOTICES OR OTHER WRITTEN CORRESPONDENCE PROVIDED TO OR RECEIVED BY THE ONTARIO MINISTRY OF LABOR, FOR THE DURATION OF THE CONTRACT
- 37.4. THE GENERAL CONTRACTOR SHALL FULLY IMPLEMENT THE PHSP FOR THE FULL DURATION OF THE CONTRACT 37.5. A COPY OF ALL APPLICABLE TRAINING CERTIFICATES MUST BE PROVIDED PRIOR TO COMMENCING ANY WORK. CERTIFICATES MUST SHOW EXACT COMPANY NAME AND ADDRESS THAT PROVIDED THE TRAINING. CSA RESERVES THE RIGHT TO REQUEST THE COURSE OUTLINE FROM THE COMPANY THAT PROVIDED THE TRAINING. IF THE PROOF OF TRAINING DOES NOT DEMONSTRATE THE WORKER AS BEING COMPETENT OPERATORS, FURTHER TRAINING MAY BE REQUESTED BY THE CSA PRIOR TO COMMENCING ANY WORK AT NO ADDITIONAL COST.
- 38. GC TO PROVIDE A MINIMUM OF 48 HOUR NOTICE TO CSA PRIOR FOR ANY DELIVERIES. GENERAL CONTRACTOR MUST BE ON SITE TO RECEIVE THE SHIPMENT. IF THE DELIVERY PERTAINS TO LIFTING EQUIPMENT, THE QUALIFIED CONTRACTOR SCHEDULED TO USE THE EQUIPMENT MUST INSPECT AND RECEIVE THE LIFT FROM THE COMPANY
- 39. GC AND ALL HIS SUB-TRADES ARE RESPONSIBLE TO PROVIDE ALL LADDERS, SCAFFOLDING, LIFTS, CRANES AND ALL OTHER EQUIPMENT & TOOLS REQUIRED FOR PROJECT SCOPE INCLUDING INSTALLING & REMOVING TARPS & PROTECTION MATERIALS. USE OF BUILDING TOOLS, EQUIPMENT, TROLLIES, FORKLIFTS, SKIDS, LADDERS, LIFTS, CRANES FTC ARE NOT PERMITTED
- 40. ALL TRADES TO FOLLOW BUILDING SERVICE ELEVATIONS STANDARD AS FOLLOW:

ELECTRIC EMT CONDUITS (POWER, CONTROLS, FIREETC.)     DRAINS & WELDED MECHANICAL PIPING W/ MINIMUM POSSIBLE LEAKAGE	ZONE 1	I	I	<u></u>	-	CEILING STRUCTURE OWSJ
ZONE 2:  SUPPLY / RETURN DUCTWORK  EXHAUST DUCTWORK	ZONE 2	2			7	
ZONE 3:  • MECHANICAL PIPING (CHWS/R, HWS/R, DCW, DHW, CAETC.)	ZONE 3					
ZONE 4:	ZONE 4					
<ul> <li>COMMUNICATION TRAYS (NETWORK, FIBER OPTICSETC.)</li> </ul>	ZONE 5				-	SUSPENDED CEILING

#### CLEAR MAINTENANCE & HEAD ROOM

**BUILDING STANDARDS - SERVICES ELEVATIONS** 

41. GENERAL CONTRACTOR AND ALL TRADES TO FOLLOW ALL CAMPUS & CSA/DFL PROCEDURES AT ALL TIMES, GC IS RESPONSIBLE TO DISTRIBUTE ALL PROCEDURES TO ALL HIS WORKERS & SUB-TRADES.

#### GENERAL ELECTRICAL NOTES:

- THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH ALL ISSUED CONTRACT SPECIFICATIONS. ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS, EXCEPT WHERE REPLACED OR CHANGED BY DIRECTIVE OR CORRECTIVE ADDENDA OR REVISED DRAWINGS AND SPECIFICATIONS.
- ALL WORK MUST BE IN FULL ACCORDANCE WITH THE CANADIAN ELECTRIC CODE PART 1 C22.1-02 AND THE LATEST EDITION OF THE ONTARIO SAFETY CODE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION (SUPPLY, INSTALLATION & WIRING) OF ALL EQUIPMENT SHOWN ON THE CONTRACT DRAWINGS AND SPECIFICATIONS UNLESS CHANGED OR REPLACED BY
- REVISED DRAWINGS, SPECIFICATIONS ADDENDA. 4. THE SUCCESSFUL BIDDER SHALL ARRANGE AND PAY FOR ALL NECESSARY PERMITS AND WORK REQUIRED TO BE
- PERFORMED BY LOCAL AUTHORITIES INCLUDING INSPECTION BY ESA AND TESTING ALL DIMENSIONS SHALL BE VERIFIED ON SITE. EXACT LOCATION OF EQUIPMENT IS SUBJECT TO SITE
- MEASUREMENTS.
- THEMSELVES WITH THE SITE CONDITIONS AND EXACT SCOPE OF WORK

6. ALL BIDDERS AND THEIR SUB TRADES ARE STRONGLY ADVISED TO ATTEND THE SITE VISIT TO FAMILIARIZE

- SSUME THE LARGER / GREATER. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
- DRAWINGS ARE NOT INTENDED TO SHOW THE DETAILS OF CONDUIT ROUTES, OFFSETS, ETC. BE RESPONSIBLE FOR CAREFULLY EXAMINE THE WORK SITE PRIOR TO TENDER CLOSE-OUT AND INCLUDE IN THE TENDER PRICE ALL NECESSARY LABOR AND MATERIAL REQUIRED FOR A FULLY OPERABLE SYSTEM AS INTENDED.
- 9. PARTS NOTED ON DRAWINGS TO BE SUPPLIED BY OWNER SHALL BE FULLY INSTALLED & SUPPORTED BY CONTRACTOR.
- 10. ALL WIRING TO BE MINIMUM #12 AWG COPPER STRANDED WIRES UNLESS OTHERWISE STATED. CONDUITS & JUNCTION BOXES SHALL NOT BE LOADED MORE THAN 60% OF ITS MAXIMUM RATED CAPACITY
- 11. ALL ELECTRICAL RACEWAYS & EQUIPMENT TO BE SQUARE TO BUILDING LINES AND SHALL BE SEPARATELY SUPPORTED FROM BUILDING STRUCTURE. A GROUND CONDUCTOR IS REQUIRED IN ALL RACEWAYS.
- 12. ALL CONNECTORS & COUPLINGS SHALL BE STEEL WITH INSULATED THROATS, ALL CONDUITS TO BE EMT, MINIMUM OF 3/4" UNLESS OTHERWISE STATED, ARMORED CABLE IS NOT A CONDUIT & PROJECT MANAGER MUST APPROVE
- 13. LOCATE ALL BOXES ON STRAIGHT RUNS, EACH BOX TO BE BONDED.
- 14. ALL CONDUIT RUNS SHALL BE COLOR CODED TO BUILDING COLOR CODE, ALL CONDUITS TO BE MARKED AT THE START AND END OF EACH RUN & AT BOTH SIDES OF ANY WALL, STANDARD ELECTRIC TAPE IS TO BE USED FOR
- 15. ALL OUTLETS, SWITCHES, COMMUNICATION JACKS TO BE WHITE, DECORA STYLE W/ BRUSHED STAINLESS STEEL COVER PLATE.
- 16. USE OF TIE WRAPS OR TIE WIRE IS NOT ACCEPTABLE.
- 17. ALL CONDUITS RUNS LENGTH SHOWN ON DRAWINGS ARE FOR GENERAL REFERENCE ONLY, CONTRACTOR TO EXAMINE SITE TO DETERMINE EXACT ROUTE & DIMENSIONS.
- 18. IMMEDIATELY AFTER AWARDING THE CONTRACT, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A DETAILED WORK SCHEDULE, IN THE FORM OF COMPUTERIZED BAR CHART OUTLINING ALL PROJECT ACTIVITIES AND
- 19. CORE DRILL WALLS AND FLOORS FOR NEW SERVICES & WIRING. SEALING OF ALL EXISTING OPENINGS AFTER SERVICES ARE REMOVED SHALL FORM PART OF THIS CONTRACT.
- 20. INSTALL EQUIPMENT IN FULL ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS.
- 21. BE RESPONSIBLE FOR REMOVAL AND REINSTATING CEILINGS AS NECESSARY
- 22. WORK UNDER THIS PROJECT MAYBE CONDUCTED AT ELEVATIONS IN EXCESS OF 15M± (50 FT ±), CONTRACTOR MUST ENSURE THAT ALL STAFF & SUB CONTRACTORS ARE TRAINED IN ELEVATED WORK AND FALL PROTECTION.
- 23. ALL SERVICES OR EQUIPMENT THAT IS SHOWN TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY COMPLETE WITH ALL ASSOCIATED SERVICES, SUPPORTS, HANGERS ETC, ANY ABANDONED OR UNUSED. COMPONENTS FOUND WITHIN THE SCOPE OF THIS PROJECT SHALL BE TERMINATED, REMOVED AND REMAINING IF
- 24. DRAWINGS ARE NOT INTENDED TO SHOW THE DETAILS OF EACH COMPONENT TO BE INSTALLED OR REMOVED. THEY ARE ONLY PROVIDING A GENERAL OVERVIEW OF THE PROJECT SCOPE. BE RESPONSIBLE TO REVIEW THE SITE CONDITIONS DURING THE TENDER PERIOD AND EXAMINE THE EXTENT OF THE DEMOLITION, REMOVALS & NEW INSTALLATIONS.
- 25. OWNER SHALL BE GIVEN THE OPTION OF RETAINING ANY REMOVED COMPONENTS OR EQUIPMENT. COORDINATE AND HAND OVER AS NECESSARY. DISPOSE OF ANY REMAINING UNWANTED EQUIPMENT OR SERVICES AND
- 26. DO NOT SUBJECT ANY PART OF THE BUILDING TO ANY NOISE, DUST OR ANY OTHER UNACCEPTABLE ENVIRONMENTAL CONDITIONS DURING THE COURSE OF THE PROJECT. ANY NOISY / DUSTY / SMELLY ACTIVITIES SHALL BE DONE AFTER HOURS OR AT WEEKENDS, COORDINATE WITH CSA PROJECT MANAGER WITH A MINIMUM

#### LINETYPE LEGEND DESCRIPTION EXISTING CONDUIT/EQUIPMENT EXISTING CONDUIT/EQUIPMENT TO BE REMOV NEW/RELOCATED CONDUIT/EQUIPMENT CONDUIT BELOW GRADE/SLAB \_\_\_\_ MECHANICAL EQUIPMENT **ROOM OUTLINE**

ED/RELOCATED	i i	
	]	

### POWER AND SYSTEMS LEGEND

SYMBOL	DESCRIPTION
	ELECTRICAL PANEL MOUNTING: SURFACE / RECESSED
T1115KVA	600V TO 120/208V TRANSFORMER (SIZE INDICATED)
JB	ELECTRICAL BOX: JB - POWER
1/3)*9	DIRECT MOTOR CONNECTION TO 600V 3Ø EQUIPMENT, HOSEPOWER INDICATED
	DISCONNECT
ТР₩	CONDUIT STUB C/W INSULATED PLASTIC BUSHINGS / CONDUIT UP / CONDUIT DOWN
<b>₩</b> WP	DUPLEX RECEPTACLE GFI 5-20R
SPLITTER	SPLITTER
MCC	MOTOR CONTROL CENTRE
	TÎÎ 5KVA  JB  1/3

Agence spatiale

ÉRIC VACHON

Director, Security & Facilities

M. FARID, P. Eng. Project Manager





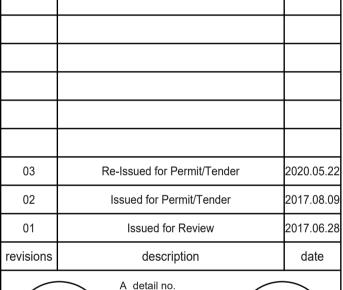
Building and Energy Engineers

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Contractor to verify all dimensions & conditions on site and immediately notify the engineer of all discrepancies.



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Drawing no

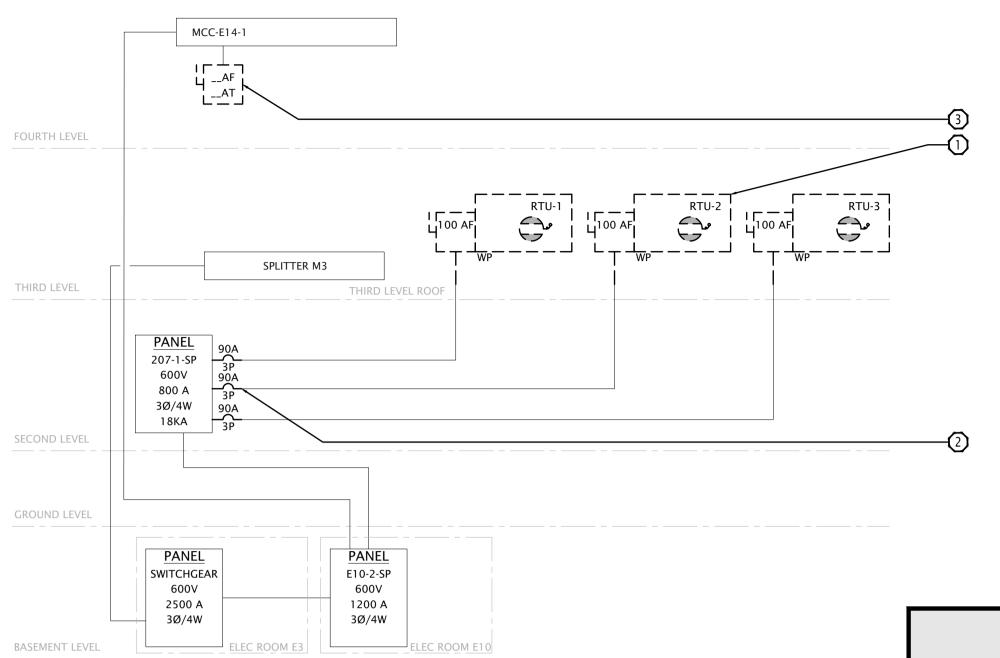
PHASE 2 RTU 1, 2, 3 REPLACEMENT

ADDRESS

ELECTRICAL GENERAL NOTES, LEGENDS, AND **SCHEUDLES** 

Designed By Conçu par M.LACHOWICZ (yyyy/mm/dd) Drawn By Dessiné par P.DESJARDINS (yyyy/mm/dd) Reviewed By Examiné par M.LACHOWICZ (yyyy/mm/dd) Approved By Approuvé par M.LACHOWICZ (yyyy/mm/dd) Tender Soumission M.LACHOWICZ Project Manager Administrateur de projets Project no. No. du projet CSA15-M7b 2016-065

No. du dessin



SINGLE LINE DIAGRAM

DEMOLITION

Scale: N.T.S.

#### DESCRIPTION OF SITE DISTRIBUTION DEMOLITION:

- TYPICAL:
  DISCONNECT RTU-2, AND RTU-3. RETAIN CONDUIT AND WIRING FOR RE-USE IN NEW CONSTRUCTION. REMOVAL OF RTUS BY MECHANICAL
- TYPICAL:
  DISCONNECT AND REMOVE 3P BREAKERS SERVING RTU-1, AND RTU-2.

  AND WIDING FOR RE-LISE IN NEW CONSTRUCTION.
- DISCONNECT AND REMOVE FUSED DISCONNECT BUCKET IN EXISTING MCC-E14-1.

			DIST	RIBUT	ION FE	EDER SCHE	DULE				
FEEDER F	ROUTING			WIRE [	DETAILS			RACEWAY	DETAILS	LENGTH	DEMANUS
DESTINATION	SOURCE	QUANTITY	GUAGE	NUMBER OF RUNS	VOLTAGE (V)	ТҮРЕ	SIZE [mm]Ø	NUMBER OF RUNS	TYPE	LENGTH	REMARKS
RTU-1	PANEL 207-1-SP	3	EXISTING	1	600	RW90	21	1	EMT		REUSE EXISTING WIRING
RTU-2	RTU-2 DISCONNECT/VFD-RTU-2	3	EXISTING	1	600	RW90	21	1	EMT		REUSE EXISTING WIRING
RTU-3	RTU-3 DISCONNECT/VFD-RTU-3	3	EXISTING	1 '	600	RW90	21	1	EMT		REUSE EXISTING WIRING
HUMIDIFIER RTU-3 (FUTURE)	MCC-E14-1	3	6	1 '	600	RW90	27	1	EMT		COIL WIRE IN JUNCTION BOX SHOWN ON DRAWINGS.

MCC-E14-1 FOURTH LEVEL HUMIDIFIER RTU-3 (FUTURE) JB 60 AF VFD 5 SPLITTER M3 THIRD LEVEL THIRD LEVEL ROOF PANEL 207-1-SP 600V 800 A 3Ø/4W 18KA SECOND LEVEL GROUND LEVEL PANEL PANEL E10-2-SP SWITCHGEAR 600V 600V 2500 A 1200 A 3Ø/4W 3Ø/4W BASEMENT LEVEL ELEC ROOM E3 ELEC ROOM E10

SINGLE LINE DIAGRAM

**NEW WORK** 

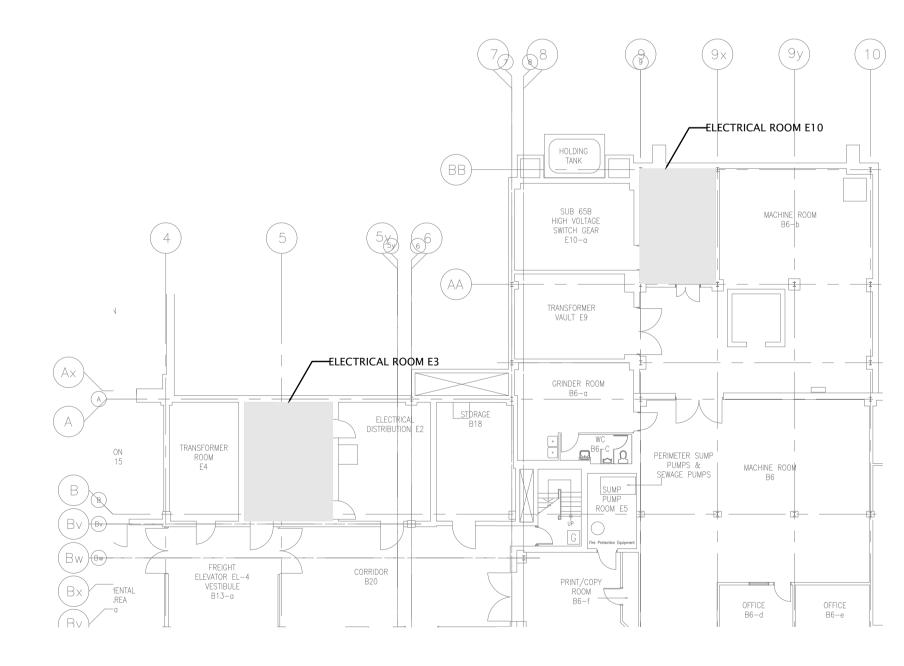
Scale: N.T.S.

#### **DESCRIPTION OF SITE DISTRIBUTION NEW WORK:**

- TYPICAL:
  PROVIDE CONNECTION TO FACTORY MOUNTED DISCONNECT ON RTU-1,
  TYPICAL OF FACH: 600V, 3Ø, 60HZ, FLA: 48.5A, MCA RTU-2, AND RTU-3 (TYPICAL OF EACH: 600V, 3Ø, 60HZ, FLA: 48.5A, MCA: 52A, MOP: 60A) C/W CONDUIT AND WIRING RETAINED DURING DEMOLITION. MODIFY AND EXTEND CONDUIT AND WIRING AS REQUIRED.
- TYPICAL:
  PROVIDE 60A 3-POLE BREAKERS IN PANEL 207-1-SP FOR RTU-1, RTU-2,
  AND RTU-3. PROVIDE CONNECTION TO CONDUIT AND WIRING RETAINED
- TYPICAL (OF 3):
  FACTORY INSTALLED AND WIRED VFD DRIVES.

: FOR CONTRACTORS USE, TO BE COORDINATED ON SITE. NOTES: ALL FEEDERS SHALL HAVE SEPARATE GROUND CONDUCTOR.

- TYPICAL (OF 3):
  PROVIDE CONNECTION TO FACTORY INSTALLED GFCI SERVICE RECEPTACLE C/W CONDUIT, WIRING, AND 20A 1-POLE BREAKER.
- TYPICAL (OF 3):
  PROVIDE FIRE ALARM CONNECTION FROM LOCAL FIRE ALARM SIGNAL
  TO DRY CONTACT ON RTU-1, RTU-2, AND RTU-3 CONTROL TERMINAL STRIP C/W CONDUIT AND WIRING.
- 6 PROVIDE CONNECTION BETWEEN EXISTING SPARE 100A FRAME IN MCC-E14-1 C/W CONDUIT AND WIRING DOWN SHAFT TO THIRD LEVEL. PROVIDE 200MM X 200MM X 100MM JUNCTION BOX IN SHAFT FOR FUTURE HUMIDIFIER CONNECTION SERVING RTU-3. COIL MINIMUM 500MM OF WIRES IN SPARE JUNCTION BOX FOR FUTURE CONNECTIONS. DISCONNECT IS TO BE LEFT UNFUSED. PROVISION OF FUSE AND HUMIDIFIER NOT IN CONTRACT.



**BASEMENT LEVEL KEYPLAN** Scale: 200

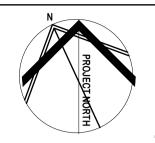
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Project Manager

Agence spatiale

ÉRIC VACHON Director, Security & Facilities

M. FARID, P. Eng.







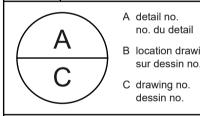
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Re-Issued for Permit/Tender 2017.08.09 Issued for Permit/Tender Issued for Review 2017.06.28 description date



B location drawing no sur dessin no. C drawing no.

PHASE 2 RTU 1, 2, 3 REPLACEMENT

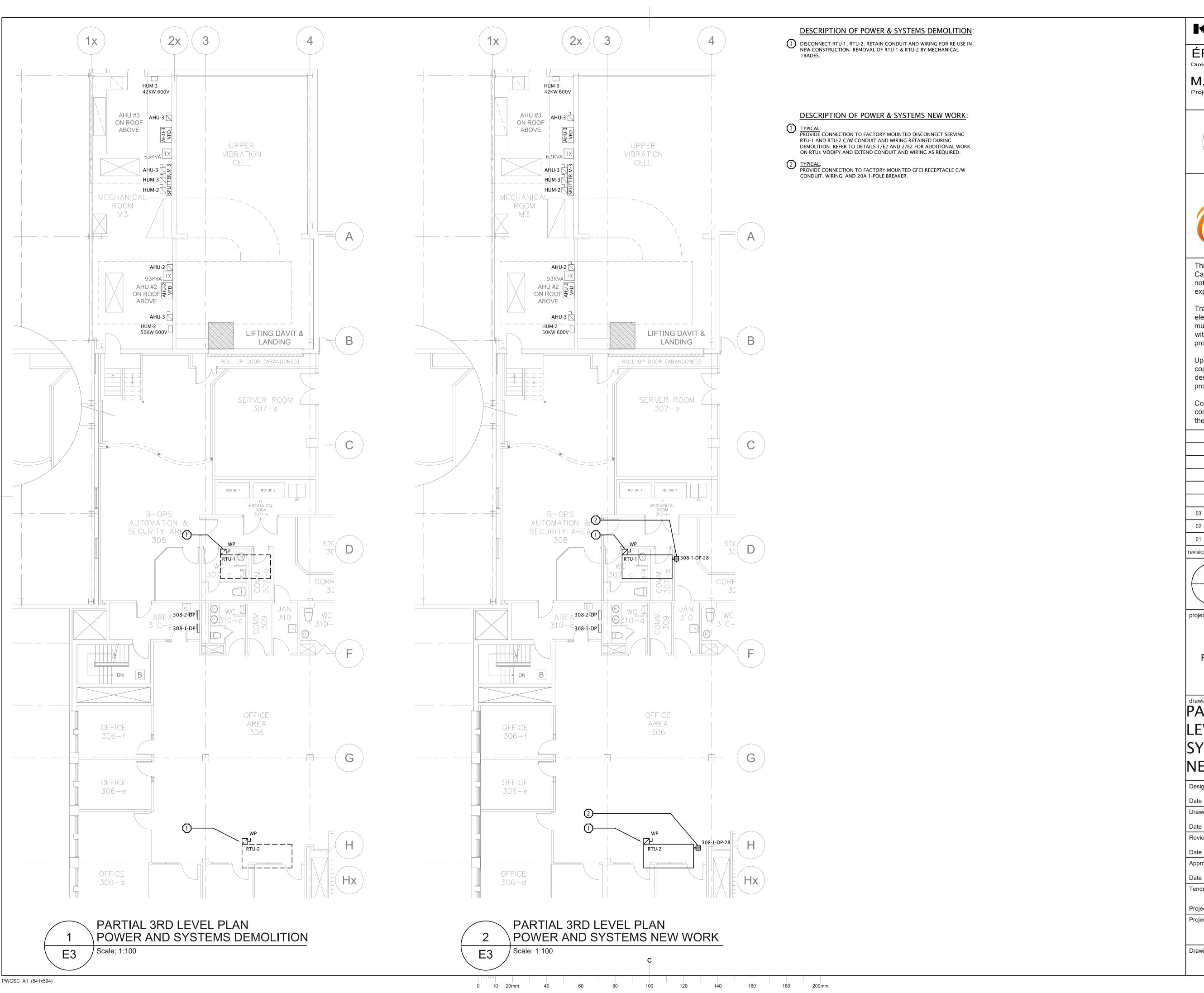
ADDRESS

ELECTRICAL SINGLE LINE DIAGRAM AND BASEMENT LEVEL KEYPLAN

Designed By Conçu par M.LACHOWICZ (yyyy/mm/dd) Drawn By Dessiné par P.DESJARDINS Date (yyyy/mm/dd) Reviewed By Examiné par M.LACHOWICZ Date (yyyy/mm/dd) Approved By Approuvé par M.LACHOWICZ Date (yyyy/mm/dd) Tender Soumission M.LACHOWICZ **Project Manager** Administrateur de projets No. du projet Project no.

CSA15-M7b 2016-065

No. du dessin Drawing no.



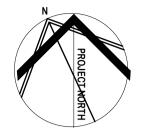
Canadian Space Agency

Agence spatiale canadienne

ÉRIC VACHON

Director, Security & Facilities

M. FARID, P. Eng.







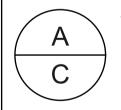
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03	Re-Issued for Permit/Tender	2020.05
02	Issued for Permit/Tender	2017.08
01	Issued for Review	2017.06
visions	description	date



no. du detail

B location drawing no. sur dessin no.

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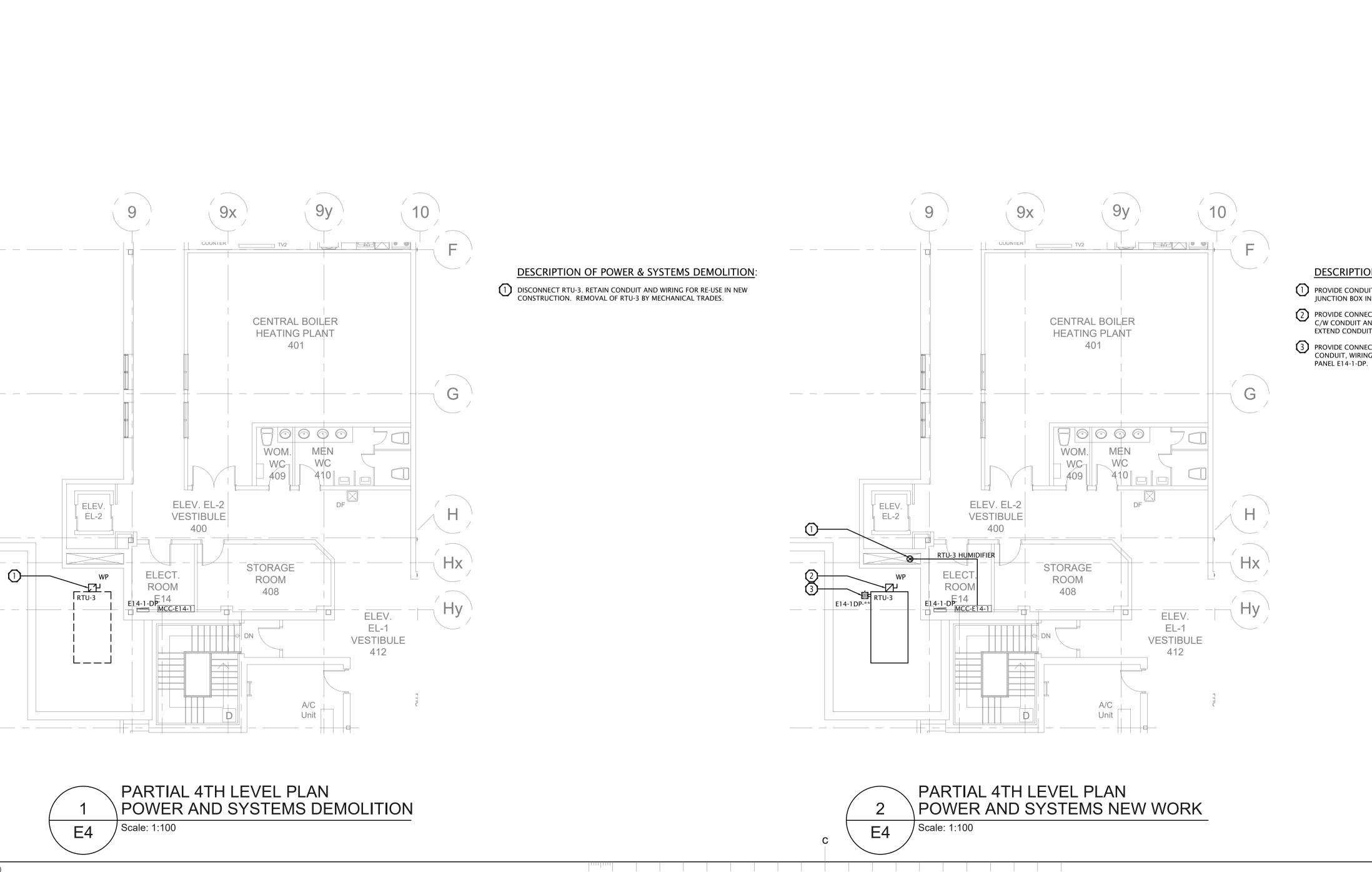
PHASE 2 RTU 1, 2, 3 REPLACEMENT

ADDRESS

## PARTIAL 2ND & 3RD LEVEL POWER & SYSTEMS DEMO & NEW WORK

Designed By	M.LACHOWICZ	Conçu par
Date	W.LACHOWICZ	(yyyy/mm/dd)
Drawn By	P.DESJARDINS	Dessiné par
Date	P.DESJARDINS	(yyyy/mm/dd)
Reviewed By	M.LACHOWICZ	Examiné par
Date	W.LACHOWICZ	(yyyy/mm/dd)
Approved By	M.LACHOWICZ	Approuvé par
Date	W.LACHOWICZ	(yyyy/mm/dd)
Tender		Soumission
	M.LACHOWICZ	
Project Manager	Administr	ateur de projets
Project no.	CSA15-M7b	No. du projet
	COA 13-1017 D	
		2016-065

No. du dessin



DESCRIPTION OF POWER & SYSTEMS NEW WORK:

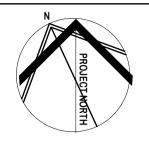
- PROVIDE CONDUIT AND WIRING DOWN TO THIRD LEVEL IN SHAFT C/W JUNCTION BOX IN SHAFT FOR FUTURE HUMIDIFIER.
- PROVIDE CONNECTION TO FACTORY MOUNTED DISCONNECT FOR RTU-3 C/W CONDUIT AND WIRING RETAINED DURING DEMOLITION. MODIFY AND EXTEND CONDUIT AND WIRING AS REQUIRED.
- C/W CONDUIT AND WIRING RETAINED DURING DEMOLITION. MODIFY AND EXTEND CONDUIT AND WIRING AS REQUIRED.

  PROVIDE CONNECTION TO FACTORY MOUNTED GFCI RECEPTACLE C/W CONDUIT, WIRING, AND 20A 1-POLE BREAKER FROM EXISTING SPACE IN

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ÉRIC VACHON
Director, Security & Facilities

M. FARID, P. Eng.







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03	Re-Issued for Permit/Tender	2020.05.22
02	Issued for Permit/Tender	2017.08.09
01	Issued for Review	2017.06.28
revisions	description	date
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A detail no.
no. du detail

B location drawing no.
sur dessin no.

C drawing no.
dessin no.

project

PHASE 2

RTU 1, 2, 3 REPLACEMENT

ADDRESS

# PARTIAL 4TH LEVEL POWER & SYSTEMS DEMOLITION & NEW WORK

Designed By		Conçu par
Date	M.LACHOWICZ	(yyyy/mm/dd)
Drawn By		Dessiné par
Date	P.DESJARDINS	(yyyy/mm/dd)
Reviewed By		Examiné par
Date	M.LACHOWICZ	(yyyy/mm/dd)
Approved By		Approuvé par
Date	M.LACHOWICZ	(yyyy/mm/dd)
Tender		Soumission
	M.LACHOWICZ	
Project Manager	Administ	rateur de projets
Project no.	CSA15-M7b	No. du projet
		2016-065
Drawing no.	E4	No. du dessin