

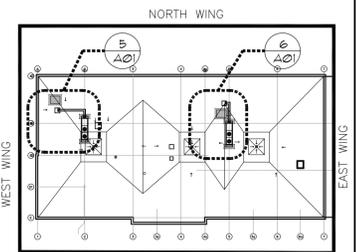
GENERAL NOTES

- CONTRACTORS TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO DEMOLITION OR CONSTRUCTION AND REPORT ANY ERRORS OR OMISSIONS TO DEPARTMENTAL REPRESENTATIVE.
- CONTRACTORS MUST VISIT THE SITE & FULLY FAMILIARIZE THEMSELVES WITH THE SCOPE OF THE WORK.
- CONTRACTORS MUST PREVENT THE SPREAD OF DUST & DEBRIS BEYOND THE WORK AREA AND CLEAN ALL SURFACES AT COMPLETION OF THEIR WORK. MAKE GOOD ALL SURFACES AFFECTED BY THIS WORK.
- G.C. TO PATCH AND MAKE GOOD ALL WALLS, CEILINGS AND FLOORS WHERE MECHANICAL, ELECTRICAL & ARCHITECTURAL ITEMS HAVE BEEN REMOVED.
- COORDINATE ALL SHUTDOWNS WITH THE DEPARTMENTAL REPRESENTATIVE.
- ARCHITECTURAL DRAWING 5247-A01 TO BE READ IN CONJUNCTION WITH MECHANICAL DRAWINGS 5247-M01 TO 5247-M03 & ELECTRICAL 5247-E01 AND STRUCTURAL 5247-S200 AND SPECIFICATIONS.

No.	Date	Revision	By:
1	SEPT 2019	ISSUED FOR TENDER	JCW
0	AUG 2019	ISS. FOR TRANSLATION	JCW
0	JUNE 2019	ISS. FOR AIRPORT AUTHORITY APPROVAL	JCW
0	SEP 2018	DESIGN FINAL REVIEW - APPROVAL	JCW

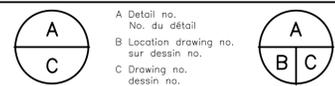
Date Printed

KEY PLAN



BUILDING U-62 KEY PLAN
NOT TO SCALE

- Verify all dimensions and site conditions and be responsible for same.
- Vérifier toutes les dimensions et l'état des lieux et en assumer la responsabilité.



project

U-62 : HVAC REPLACEMENT OF AIR HANDLING UNITS (62AHU 111 AND 62AHU 120)

UPLANDS CAMPUS

drawing
 ROOFTOP (C/W PHOTOS)
 - EXISTING ROOF PLAN
 - DEMOLITION AND NEW LAYOUTS
 - ARCHITECTURAL NOTES
 - ROOFING DETAILS

designed by **JCW/ JWG** congru date **FEB 2019** date

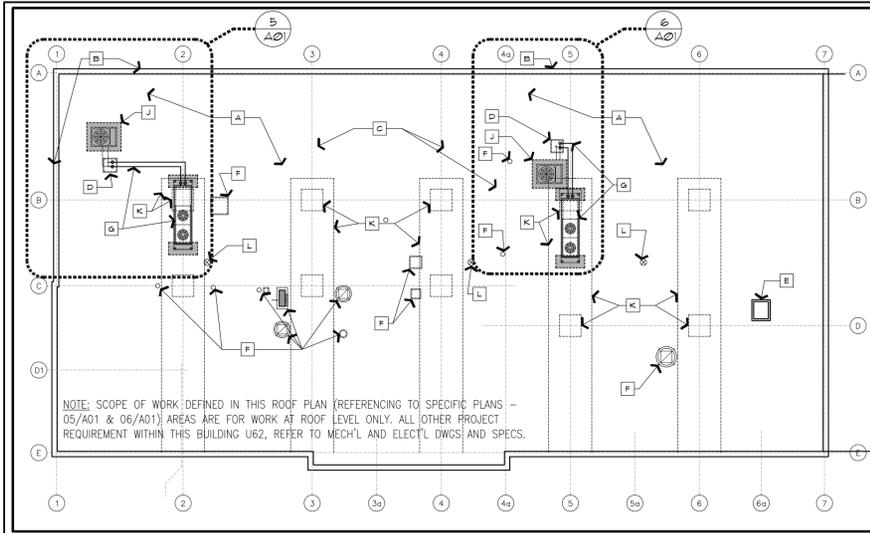
drawn **JCW** dessiné **JCW** scale **AS SHOWN** échelle

checked **IDT. / S.H.** vérifié **IDT. / S.H.** sheet **1** of/de **6** feuille

approved **B.V./A.S.** approuvé **B.V./A.S.** W.O.no. **A1-011227-08-01** D.T.no.

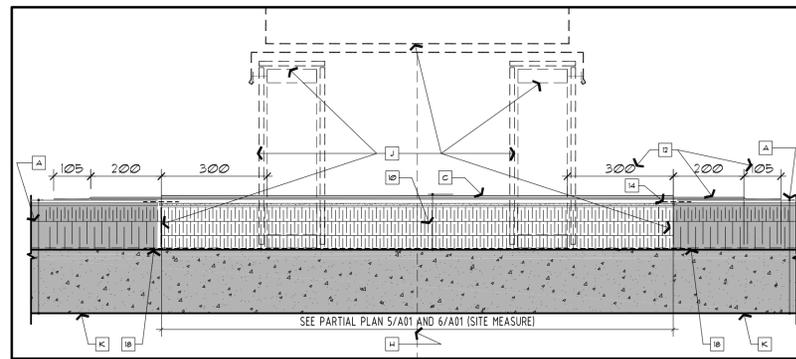
dwg.no. **5247-A01** dessin no.

Acad File: **5247-U62-ARCH-TENDER-SEPT2019** fichier CDAO

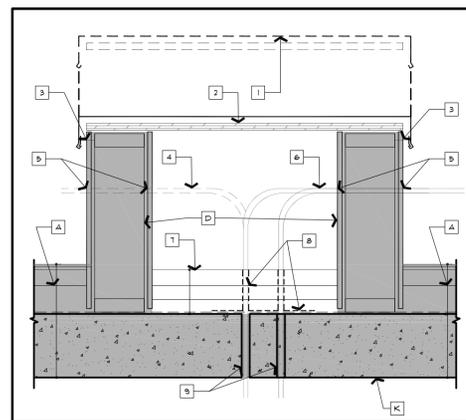


1 MAIN ROOF PLAN - U62
SCALE 1:200

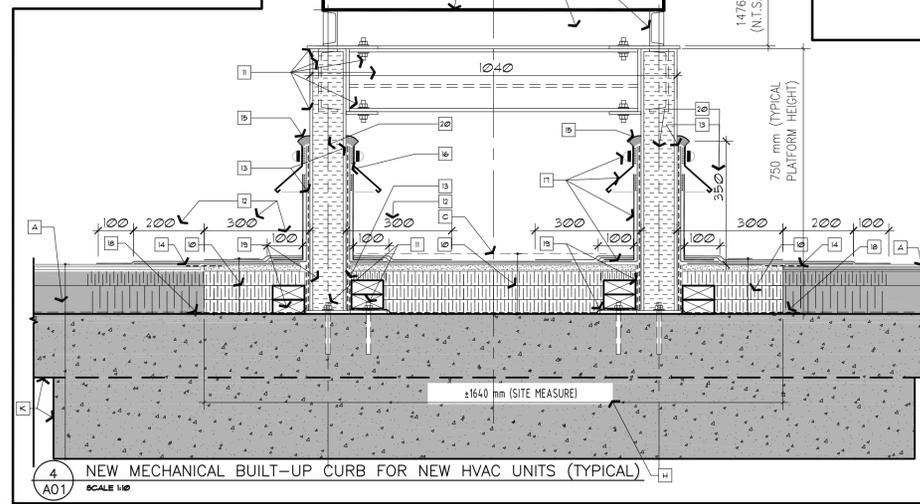
- PLAN AND DETAILS SPECIFIC NOTES:**
- REMOVE COMPLETELY EXISTING METAL COVER ASSEMBLY AND FASTENING.
 - PROVIDE, CONSTRUCT AND INSTALL NEW METAL CAP FLASHING (PRE-FINISHED) COVER AS A REMOVABLE COVER ASSEMBLY. NEW COVER CONSTRUCTION C/W 19mm PLYWOOD AND METAL PRE-FINISHED LINER TOPER AND PERIMETER SIDE DRIP EDGE AND ATTACHMENTS. CONSTRUCT TO INCLUDE ADEQUATE DRAINAGE SLOPE.
 - FASTEN COVER ASSEMBLY TO CURB USING LAG SCREWS WITH NEOPRENE WASHERS.
 - EXISTING ELECT'L / MECH'L PIPING AND SERVICES FOR AIR/COND UNIT TO BE REMOVE (SEE MECH'L / ELECT'L DWGS FOR EXTENT)
 - SEAL AROUND REMOVED AND NEW PIPES ENTRIES WITH PLASTIC CEMENT.
 - NEW ELECT'L / MECH'L PIPING AND SERVICES FOR HVAC UNIT TO BE INSTALLED AND CONNECTED TO NEW UNIT SEAL AT ENTRY JUNCTION (SEE MECH'L / ELECT'L DWGS FOR EXTENT)
 - REMOVE EXISTING FIBERGLAS INSULATION AND RE-INSTALL WITH NEW (3 LAYERS OF 40mm FIBERGLAS)
 - SEAL AROUND ALL PIPES WITH PLASTIC CEMENT.
 - MAINTAIN EXISTING HOLES IN SLAB FOR NEW PIPING, FIRESTOP COMPLETELY VOID AND HOLE.
 - NEW REPAIR ROOFING ASSEMBLY
 - NEW SINGLE PLY MODIFIED BITUMINOUS MEMBRANE COVER SHEET
 - NEW SINGLE PLY MODIFIED BITUMINOUS MEMBRANE BASE SHEET
 - NEW 6mm ASPHALT BOARD
 - NEW 75mm-100mm RIGID INSULATION TO SUIT THICKNESS OF ADJACENT EXISTING ROOFING SLOPE AND DRAINAGE PATTERN.
 - NEW CONTINUOUS VAPOUR BARRIER
 - EXISTING 180mm REINFORCED CONCRETE ROOF SLAB TO REMAIN.
 - NEW STRUCTURAL STEEL ASSEMBLY C/W HSS POST, CHANNELS, TOP AND BOTTOM PLATES AND MISC ANCHOR BOLTS AND FASTENERS, AND BRACING ANGLES. PROVIDE LEVEL/PLUM SURFACE FOR UNIT INSTALLATION. ENSURE BOLTS ARE INSTALLED 115mm INTO SLAB. REFER TO STRUCTURAL DWG S200.
 - TYPICAL MEMBRANE ASSEMBLY. PROVIDE 100mm, 200mm AND 300mm OVERLAPS AS SHOWN.
 - EXTEND VAPOUR BARRIER FULL PERIMETER OF HSS POST TO 350mm HIGH AS SHOWN c/w 100mm OVERLAPS.
 - PROVIDE ROOFING TAPE AT JUNCTION WITH EXISTING.
 - CONTINUOUS CAULKING FULL PERIMETER AT COLLAR JUNCTION.
 - 6.0mm CLEAR MIN TO RAIN COLLAR FLASHING.
 - ALUM. RAIN COLLAR FLASHING c/w 100mm OVERLAP TO SUIT SQUARE HSS. INSTALL DRAW BAND C/W NEOPRENE TAPE FULL PERIMETER AND SELF ADHESIVE GASKET WITH ACRYLIC SEALANT. FULLY EMBED BOTTOM COLLAR FLANGES WITH HEATED ROOFING MEMBRANE.
 - WHERE NEW VAPOUR BARRIER MEETS EXISTING, PROVIDE 150mm MIN OVERLAP.
 - ENSURE NEW VAPOUR BARRIER OVERLAP OVER FULL PERIMETER NEW STRUCTURAL BASE PLATE COMPONENTS.
 - INSIDE HSS POST, FILL WITH LOW EXPANSION POLYURETHANE FULL DEPTH OF HSS POST. HSS POST TO BE PROVIDED WITH ADEQUATE HOLES (QTY 2) TO FILL INSIDE. HOLES LOCATION TO BE HIDDEN WITHIN COLLAR ASSEMBLY.
- A** - TYPICAL EXISTING ROOF CONSTRUCTION (2014) TO REMAIN
 - SINGLE PLY MODIFIED BITUMINOUS MEMBRANE COVER SHEET
 - SINGLE PLY MODIFIED BITUMINOUS MEMBRANE BASE SHEET
 - 6mm ASPHALT BOARD
 - 75mm RIGID INSULATION
 - SLOPED RIGID INSULATION TO SUIT DRAINAGE PATTERN
 - VAPOUR BARRIER
- B** - EXISTING 180mm (7") REINFORCED CONCRETE ROOF SLAB
 - EXISTING ROOF PERIMETER PARAPET
- C** - EXISTING DRAINAGE PATTERN AND SLOPE TO EXISTING DRAINS.
 ENSURE ALL NEW RE-ROOFING WORK MEETS EXISTING FLOW DIRECTIONS. THICKEN INSULATION TO PROVIDE DOWNWARD SLOPE OF MEMBRANE.
- D** - EXISTING CURB TO REMAIN C/W NEW CONDUIT PENETRATIONS (SEE ELECT'L AND MECH'L FOR EXTENT) AND DETAIL 2/A01
- E** - EXISTING HATCH TO REMAIN. COORDINATE ACCESS WITH NRC REPRESENTATIVE.
- F** - EXISTING MECH'L EQUIPMENT, EXHAUST AND VENTS TO REMAIN. REFER TO MECH'L AND ELECT'L SCOPE FOR EXTENT.
- G** - TWO NEW HVAC UNITS (SEE MECH'L & ELECT'L DWGS FOR EXTENT) C/W NEW CONDUITS, PIPING FOR INTERNAL CHILLER AND FAN AS ONE UNIT. (SEE DETAILS 4 / A01). UPPER SUPPORT TO BE SUPPLIED AND DESIGNED BY HVAC MANUFACTURER, DELIVERED AND INSTALLED ON SITE. LOCATION TO BE COORDINATED ON SITE WITH NRC REPRESENTATIVE. G.C. TO COORDINATE WITH STRUCTURAL FOR FINAL SIZE AND SUPPORT REQUIREMENTS..
 HVAC UNIT (QTY 2) = SEE MECH'L SPECS.
 SIZE = 3340mm(Wd) X 965mm(Dp) X 1600mm(Hg)
 WEIGHT = Aprox. 1225lbs
- H** - APPROXIMATE WIDTH OF ROOF AREA AFFECTED BY RE-ROOFING WORK. G.C. TO CONFIRM WITH NRC REPRESENTATIVE.
- J** - EXISTING HVAC UNIT AND CURB AND ADJACENT ROOFING TO BE REMOVED TO EXTENT SHOWN. INFILL WITH NEW ROOFING. SEE 3/A01.
- K** - EXISTING REINFORCED CONCRETE ROOF SLAB 180mm (7") THICK c/w ADDITIONAL CONCRETE THICKENING 9" (230mm) - TOTAL 405mm (16") DEEP AS A CONTINUOUS STRIP BELOW SLAB.
- L** - TYPICAL EXISTING ROOF DRAIN.



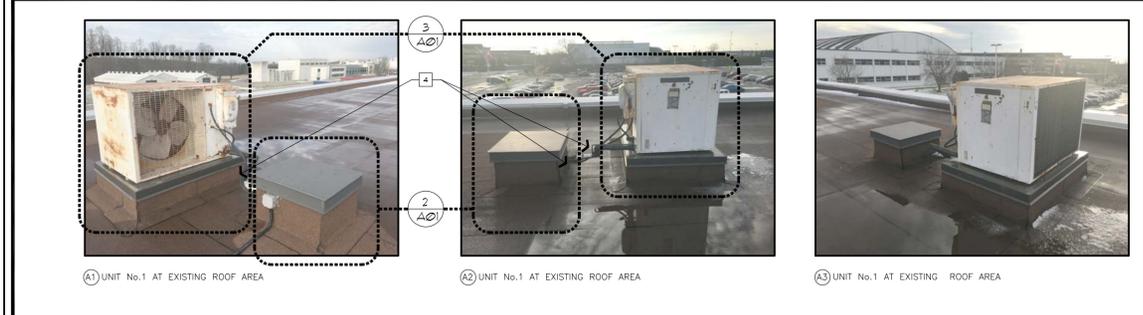
3 DEMOLITION BUILT-UP CURB C/W NEW ROOFING (TYPICAL)
SCALE 1:10



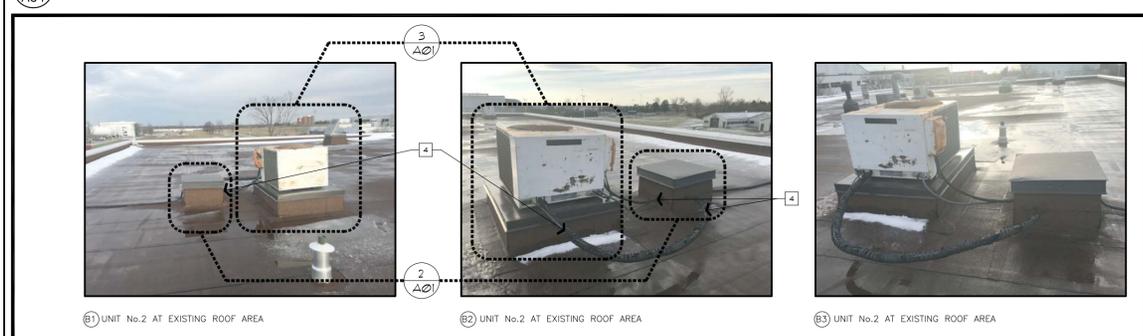
2 NEW CONDUITS PENETRATIONS IN EXISTING CURB (TYPICAL)
SCALE 1:10



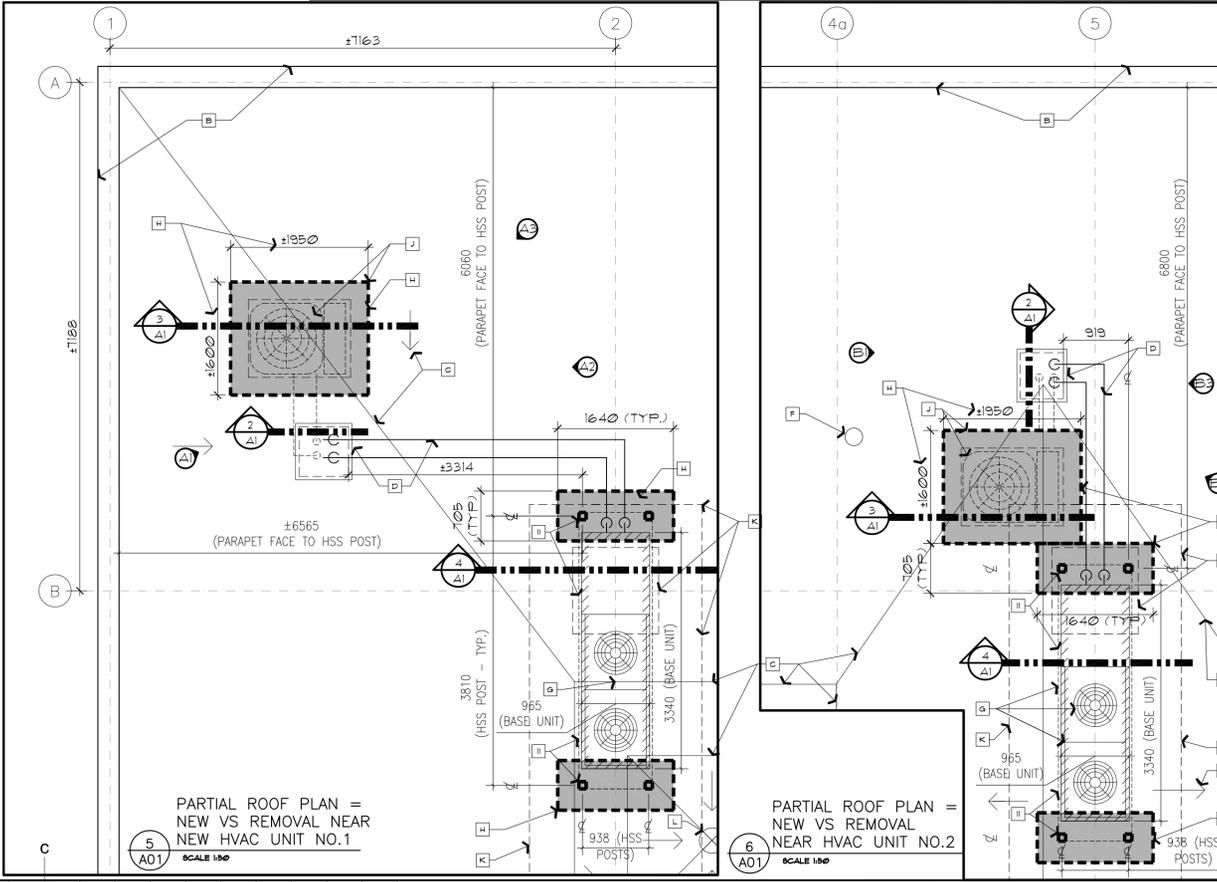
4 NEW MECHANICAL BUILT-UP CURB FOR NEW HVAC UNITS (TYPICAL)
SCALE 1:10



A MISCELLANEOUS ROOF PICTURES - EXISTING UNIT NO.1 (62PAS111)
NTA

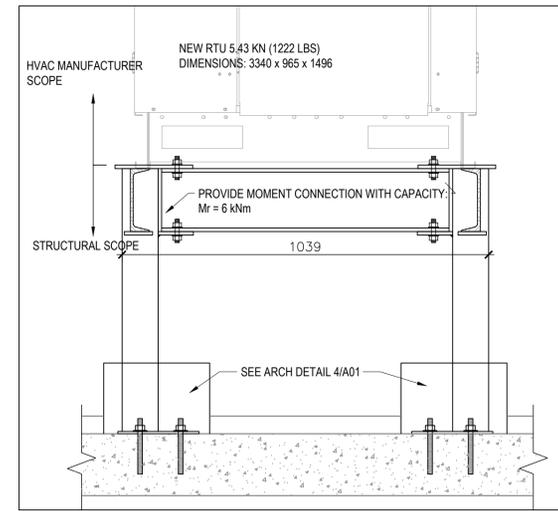
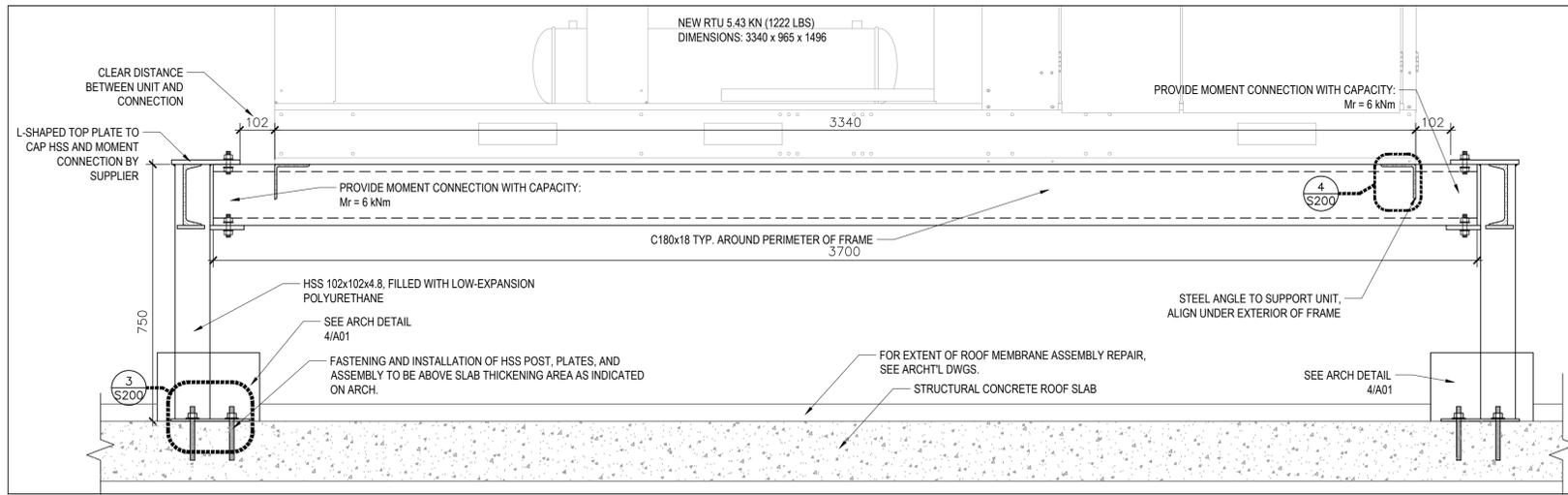


B MISCELLANEOUS ROOF PICTURES - EXISTING UNIT NO.2 (62PAS120)
NTA



5 PARTIAL ROOF PLAN = NEW VS REMOVAL NEAR HVAC UNIT NO.1
SCALE 1:50

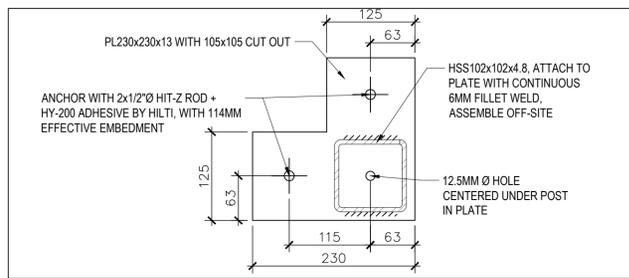
6 PARTIAL ROOF PLAN = NEW VS REMOVAL NEAR HVAC UNIT NO.2
SCALE 1:50



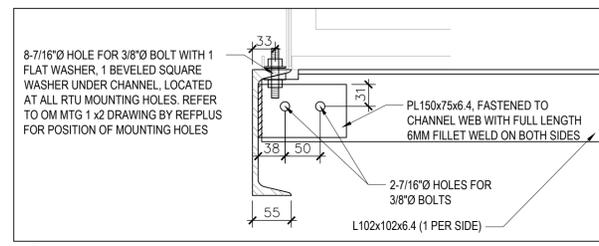
1 SUPPORT FRAME ELEVATION (TYP.)
 SCALE/ECHELLE: 1:10

NOTE: ALL STEEL TO BE GALVANIZED

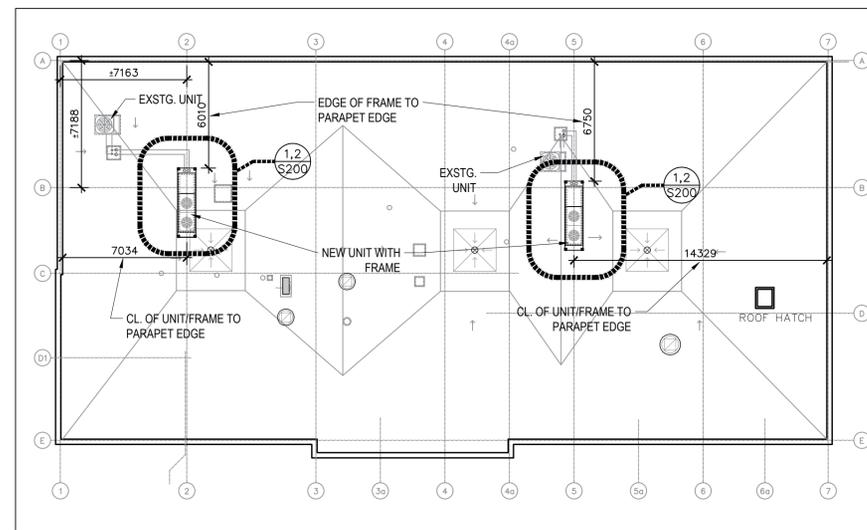
2 SUPPORT FRAME ELEVATION (TYP.)
 SCALE/ECHELLE: 1:10



3 BEARING PLATE (TYP.)
 SCALE/ECHELLE: 1:5



4 CHANNEL ATTACHMENT DETAIL (TYP.)
 SCALE/ECHELLE: 1:5



5 PARTIAL ROOF PLAN WITH RTU UNIT LOCATIONS
 SCALE/ECHELLE: 1:200

GENERAL NOTES

- STRUCTURAL DESIGN IS IN ACCORDANCE WITH THE 2015 NATIONAL BUILDING CODE OF CANADA (NBC) SUPPLEMENTED BY THE 2010 NATIONAL BUILDING CODE OF CANADA STRUCTURAL COMMENTARY.
- THIS IS A METRIC PROJECT. UNLESS OTHERWISE NOTED, ALL LENGTHS ARE IN MILLIMETERS.
- REVIEW STRUCTURAL DRAWINGS IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS. REPORT DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.
- COORDINATE ALL OPENINGS, SLEEVES AND EMBEDDED ITEMS IN STRUCTURE WITH ALL OTHER CONTRACT DOCUMENTS. REPORT ANY ITEMS THAT ARE IN CONFLICT BEFORE PROCEEDING WITH THE WORK.
- VERIFY EXISTING DIMENSIONS AND CONDITIONS ON SITE PRIOR TO CONSTRUCTION.
- THE REVISION COLUMN INDICATES THE INTENDED USE OF THESE DRAWINGS. DO NOT CONSTRUCT FROM THESE DRAWINGS UNLESS MARKED 'ISSUED FOR CONSTRUCTION'.
- DO NOT USE INFORMATION ON THESE DRAWINGS FOR ANY OTHER PROJECTS.
- DO NOT SCALE THESE DRAWINGS.
- TYPICAL DETAILS SHOW STRUCTURAL INTENT RATHER THAN ACTUAL PROJECT CONDITIONS. (NOTE THAT TYPICAL DETAILS ARE NOT ALWAYS REFERENCED ON PLAN.)
- SECTIONS, DETAILS, AND STATEMENTS NOTED AS 'TYPICAL' SHALL CONVEY THAT CONDITIONS ARE LIKE OR SIMILAR IN THE STRUCTURE.
- THESE DRAWINGS SHOW THE COMPLETED STRUCTURE ONLY. TEMPORARY WORKS FOR WHICH THE CONTRACTOR IS RESPONSIBLE AND WHICH MAY BE REQUIRED FOR EXECUTION OF THE PROJECT ARE NOT SHOWN. CONSTRUCTION LOADS ON THE PERMANENT STRUCTURE SHALL NOT EXCEED DESIGN LOADS INDICATED ON DRAWINGS.
- ALL TEMPORARY WORKS SHALL BE DESIGNED AND REVIEWED BY A PROFESSIONAL ENGINEER RETAINED BY THE CONTRACTOR, LICENSED IN ONTARIO.
- EMBEDDED ITEMS, INCLUDING ANCHOR BOLTS, HAVE BEEN DESIGNED FOR LOADS OF THE COMPLETED STRUCTURE ONLY. THE USE OF THESE ELEMENTS FOR TEMPORARY SUPPORT DURING CONSTRUCTION MUST BE APPROVED BY THE CONTRACTORS ENGINEER.
- PROVIDE REASONABLE NOTICE (NOT LESS THAN 24 HOURS) PRIOR TO CONCEALING ANY WORK THAT REQUIRES INSPECTION, REVIEW, OR TESTING. SCHEDULE THIS WORK TO OCCUR DURING NORMAL BUSINESS HOURS.
- PERIODIC FIELD REVIEW OF A REPRESENTATIVE SAMPLE OF THE STRUCTURAL WORK DESIGNED BY JP2G WILL BE UNDERTAKEN TO AS CERTAIN GENERAL CONFORMANCE WITH THE STRUCTURAL DRAWINGS AND SPECIFICATIONS. THESE REVIEWS DO NOT REPLACE THE CONTRACTOR'S RESPONSIBILITY FOR QUALITY CONTROL AND QUALITY ASSURANCE.
- ALL STRUCTURAL WORK DESIGNED BY PROFESSIONAL ENGINEERS RETAINED BY THE CONTRACTOR SHALL BE REVIEWED BY THE ENGINEERS RESPONSIBLE FOR THE DESIGN OR THEIR REPRESENTATIVE. SUBMIT CONSTRUCTION REVIEW REPORTS TO JP2G FOR REVIEW.
- ALL TEMPORARY SHORING REQUIRED IS NOT SHOWN ON STRUCTURAL DRAWINGS. CONTRACTOR AND THEIR ENGINEER SHALL DETERMINE THE TEMPORARY SHORING REQUIREMENTS.
- DESIGNING TEMPORARY WORKS SUCH AS SHORING, EXCAVATION SHORING, FALSE WORK, ELEVATED OR ACCESS PLATFORMS, VERIFICATION OF THE ABILITY OF STRUCTURES TO SUPPORT CONSTRUCTION EQUIPMENT SUPPORT AND SHORING OF STRUCTURES BELOW SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND THEIR ENGINEER. DETAILS AND METHODOLOGY FOR ALL OF THESE WORKS SHALL BE SIGNED AND STAMPED BY A PROFESSIONAL ENGINEER AND SUBMITTED FOR OUR RECORDS.

DESIGN LOADS

- THE VALUES FOR CLIMATIC DATA USED IN THE DETERMINATION OF DESIGN LOADS HAVE BEEN OBTAINED FROM THE 2015 NBC FOR THE SPECIFIC LOCATION OF OTTAWA, ONTARIO.
- SELF WEIGHT (SWT) IS DUE TO THE WEIGHT OF THE STRUCTURE ITSELF. IT VARIES WITH THE STRUCTURAL SYSTEM, AND INCLUDES CONCRETE TOPPINGS ON STEEL DECK.
- SUPERIMPOSED DEAD LOADS (SDL) ARE NON-STRUCTURAL DEAD LOADS DUE TO NON-STRUCTURAL TOPPINGS, FINISHES, PARTITIONS, ROOFING MATERIALS, SUSPENDED EQUIPMENT, PAVERS, SOIL, ETC.
- DEAD LOAD (DL) IS THE SELF WEIGHT OF THE STRUCTURE PLUS THE SUPERIMPOSED DEAD LOAD.
- GRAVITY LOADS ARE SHOWN ON PLANS. LIVE LOAD REDUCTION HAS NOT BEEN USED.
- UNLESS OTHERWISE NOTED, DESIGN LOADS SHOWN ARE SPECIFIED (UNFACTORED) LOADS, TO BE USED FOR ULS DESIGN.
- FOR POINT LOADS, IF ONLY ONE LOAD IS GIVEN, CONSIDER IT LIVE LOAD.
- DEAD DENSITY OF CONCRETE USED FOR DESIGN: 23.5 kN/m³
- LIVE RTU: **1,222 LBS. (5.43 KN)**
- SNOW (AT NEW EXTERIOR UNIT)
 Is (ULS) = 1.0 (NORMAL IMPORTANCE) Is (SL) = 0.9
 Ss = 2.4 kPa Sr = 0.4 kPa
 ROOF ANGLE: FLAT (0°)
 EXPOSED: NO
 PARAPET: N/A
 SNOW DRIFT NEAR UNIT: 3.76 kPa, DRIFT LENGTH 2.32M
 UPPER ROOF: N/A
 MINIMUM UNFACTORED SNOW LOAD = **2.32 kPa**
- WIND
 Iw (ULS) = 1.0 (NORMAL IMPORTANCE) Iw (SL) = 0.75
 Q = 0.41 kPa
 BUILDING IS: LOW RISE
 TERRAIN TYPE: OPEN
 Ce = 0.90
 WIND LOAD ON FACE OF ROOFTOP MECH. UNITS: **0.42 kPa**.
- SEISMIC
 FOR EXTERIOR MECH. UNIT:
 NBC CODE CLAUSE: 4.1.8.18 (NON-STRUCTURAL COMPONENTS AND EQUIPMENT)
 Ie = 1.0 (NORMAL IMPORTANCE)
 SITE CLASS: E (ASSUMED), HORIZONTAL SHEAR WAVE VELOCITY: NOT PERFORMED
 Fa = 1.19
 Sa (0.2) = 0.439
 PART TYPE: 11 - MACHINERY, FIXTURES, EQUIPMENT THAT ARE FLEXIBLE OR FLEXIBLY CONNECTED, Cp = 1.0, Ar = 2.5, Rp = 2.5, Av = 2.0
 Sp = 2.0
 Vp = 0.3FasA(0.2)kSpWp = 0.31Wp
 Wp = AS PER LIVE LOADS, SEE ABOVE

DESIGN LOADS (CONT'D)

- AN ANALYSIS OF THE CONCRETE ROOF SLAB WAS PERFORMED WHEN SUBJECTED TO EXISTING LOADINGS (SNOW AND DEAD) AND NEWLY APPLIED LOADS (ADDITIONAL LOAD FROM THE MECHANICAL UNIT AND SNOW DRIFT). PARAMETERS USED IN THE ANALYSIS WERE BASED ON ORIGINAL STRUCTURAL DRAWINGS, DATED 1951, AS FOLLOWS:
 - CONCRETE YIELD STRENGTH IN COMPRESSION OF 3000 PSI (21 MPa)
 - REBAR YIELD STRENGTH OF 275 MPa, TO REFLECT 'HARD GRADE'
 RESULTS OF THE ANALYSIS INDICATE THAT THE EXISTING SLAB HAS SUFFICIENT CAPACITY TO RESIST ALL NEWLY APPLIED LOADINGS IN ADDITION TO EXISTING LOADINGS. THE UNDERSIDE OF THE ROOF SLAB WAS INSPECTED IN AREAS WHERE NEW UNITS ARE TO BE INSTALLED SHOWING NO APPARENT DAMAGE. REPAIR OR REINFORCEMENT OF THE ROOF SLAB IS THEREFORE NOT REQUIRED AT THIS TIME.
- CONFORM TO CSA S16.
- MATERIALS: TO CSA G40.21 UNLESS OTHERWISE NOTED, WITH THE FOLLOWING GRADES:
 CHANNELS, ANGLES: 300W
 PLATES, BARS: 300W
 HOLLOW STRUCTURAL SECTIONS: 350W (CLASS 'C')
 PIPE: ASTM A325M UNLESS NOTED
 ANCHOR RODS: 400W
- STRUCTURAL DRAWINGS SHOW DESIGN INTENT. REFER TO SPECIFICATIONS FOR CONNECTION DESIGN, DETAILING, FABRICATION, AND ERECTION REQUIREMENTS.
- DO NOT MODIFY STRUCTURAL MEMBERS ON SITE.
- WHERE GALVANIZED SURFACES HAVE BEEN DAMAGED OR FIELD WELDED, CLEAN SURFACES DOWN TO BARE METAL AND APPLY TWO COATS OF ZINC-RICH TOUCH-UP PAINT.
- PROVIDE ERECTION BRACING REQUIRED TO KEEP THE STRUCTURE STABLE DURING CONSTRUCTION.
- DISTRIBUTE HANGER LOADS FROM MECHANICAL AND HEAVY ELECTRICAL SERVICES SUSPENDED FROM STEELWORK SUCH THAT THEY DO NOT CAUSE TWISTING OF STEEL MEMBERS OR EXCESSIVE BENDING OF MEMBER FLANGES.

SHOP DRAWINGS

- SUBMIT FOR REVIEW ALL SHOP DRAWINGS REQUIRED BY THESE DRAWINGS AND SPECIFICATIONS.
- REVIEW OF SHOP DRAWINGS IS ON A SAMPLING BASIS, FOR GENERAL CONFORMITY WITH STRUCTURAL CONTRACT DOCUMENTS. IT IS NOT A DETAILED CHECK AND MUST NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF RESPONSIBILITY FOR MAKING THE WORK ACCURATE AND IN CONFORMITY WITH THE CONTRACT DOCUMENTS.
- REVIEW OF SHOP DRAWINGS DOES NOT IMPLY ANY CHANGE IN ANY OTHER CONSULTANTS' OR PROFESSIONALS' RESPONSIBILITIES RELATED TO DESIGN OF SPECIFIC ITEMS AS OUTLINED BY THE SPECIFICATIONS.
- REVIEW OF A SPECIFIC COMPONENT ON NON-STRUCTURAL SHOP DRAWINGS (COMPONENTS ENGINEERED BY OTHERS) DOES NOT INCLUDE REVIEW OF THE ASSEMBLY OF WHICH THE ITEM MAY BE A COMPONENT.
- IF REQUIRED, CAD FILES OF THE FULL SET OF STRUCTURAL DRAWINGS ARE AVAILABLE 'AS-IS' FOR USE IN THE PREPARATION OF SHOP DRAWINGS, PROVIDED THAT THE OWNER AND THE OWNER'S CONSULTANTS ARE NOT HELD RESPONSIBLE FOR ANY ERRORS OR OMISSIONS ON THE DRAWINGS. THESE CAD DRAWINGS ARE NOT TO BE SCALED. TO RECEIVE THE CAD FILES, THE CONTRACTOR MUST BE WILLING TO SIGN A DRAWING RELEASE WAIVER.
- ALLOW A MINIMUM OF 3 WORKING DAYS FOR REVIEW OF EACH SUBMISSION OF SHOP DRAWINGS. ALLOW MORE TIME WHEN LARGE QUANTITIES OF SHOP DRAWINGS ARE SUBMITTED. SUBMIT IN GENERAL CONFORMITY WITH THE SEQUENCE OF CONSTRUCTION INTENDED.
- MAKE CORRECTIONS REQUIRED BY PREVIOUS REVIEW BEFORE RESUBMITTING DRAWINGS. CLEARLY INDICATE ALL CHANGES AND ADDITIONS TO PREVIOUS SUBMISSION. DO NOT ADD NEW DETAILS TO DRAWINGS WHICH HAVE BEEN STAMPED AS REVIEWED OR NOTED.
- AFTER REVIEW, THE DRAWINGS WILL BE STAMPED AND RETURNED TO SHOW ONE OF THE FOLLOWING:
 NOT REVIEWED: SHOWS WORK WHICH IS NOT WITHIN THE SCOPE OF STRUCTURAL CONSULTING SERVICES.
 REVIEWED: CONTRACTOR APPEARS TO HAVE INTERPRETED THE CONTRACT DOCUMENTS CORRECTLY AND THE CONSULTANT HAS NO SPECIFIC COMMENT OR NOTES.
 NOTED: THE CONTRACTOR SHALL ADDRESS THE NOTES FROM THE CONSULTANT PRIOR TO CONSTRUCTION. SUBMIT FINAL RECORD PRINT.
 REVISE & RESUBMIT: ADDRESS COMMENTS AND RESUBMIT FOR REVIEW PRIOR TO FABRICATION.
- ENGINEER SEALED SHOP DRAWINGS WHEN REQUIRED BY SPECIFICATIONS. SHOP DRAWINGS NOT SEALED, SIGNED, AND DATED WILL BE MARKED 'RESUBMIT' AND RETURNED WITHOUT BEING REVIEWED.
- DO NOT COMMENCE FABRICATION UNTIL RETURNED SHOP DRAWINGS HAVE BEEN EXAMINED.
- PROVIDE FINAL RECORD DRAWINGS AFTER ALL CORRECTIONS ARE MADE.

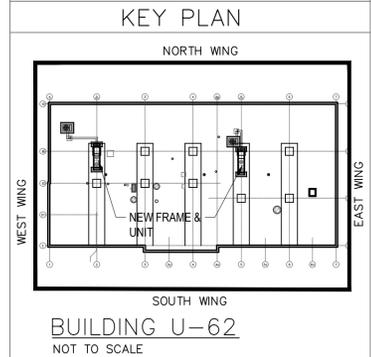
STRUCTURAL STEEL

- ALL EXTERIOR STRUCTURAL STEEL (FRAME SUPPORTING MECH. UNIT ON ROOF) TO BE HOT DIPPED GALVANIZED, APPLICATION MUST EXCEED 610g/m²
- ALL CONNECTORS FOR NEW MECHANICAL UNIT SUPPORT FRAME NOT WITHIN WATERPROOF BOXES TO BE GALVANIZED.
- CONFORM TO CSA S16.
- MATERIALS: TO CSA G40.21 UNLESS OTHERWISE NOTED, WITH THE FOLLOWING GRADES:
 CHANNELS, ANGLES: 300W
 PLATES, BARS: 300W
 HOLLOW STRUCTURAL SECTIONS: 350W (CLASS 'C')
 PIPE: ASTM A325M UNLESS NOTED
 ANCHOR RODS: 400W
- STRUCTURAL DRAWINGS SHOW DESIGN INTENT. REFER TO SPECIFICATIONS FOR CONNECTION DESIGN, DETAILING, FABRICATION, AND ERECTION REQUIREMENTS.
- DO NOT MODIFY STRUCTURAL MEMBERS ON SITE.
- WHERE GALVANIZED SURFACES HAVE BEEN DAMAGED OR FIELD WELDED, CLEAN SURFACES DOWN TO BARE METAL AND APPLY TWO COATS OF ZINC-RICH TOUCH-UP PAINT.
- PROVIDE ERECTION BRACING REQUIRED TO KEEP THE STRUCTURE STABLE DURING CONSTRUCTION.
- DISTRIBUTE HANGER LOADS FROM MECHANICAL AND HEAVY ELECTRICAL SERVICES SUSPENDED FROM STEELWORK SUCH THAT THEY DO NOT CAUSE TWISTING OF STEEL MEMBERS OR EXCESSIVE BENDING OF MEMBER FLANGES.

EXISTING SLAB

- AN ANALYSIS OF THE EXISTING CONCRETE ROOF SLAB WAS PERFORMED WHEN SUBJECTED TO EXISTING LOADINGS (SNOW AND DEAD) AND NEWLY APPLIED LOADS (ADDITIONAL LOAD FROM THE MECHANICAL UNIT AND SNOW DRIFT). RESULTS OF THE ANALYSIS INDICATE THAT THE EXISTING SLAB HAS SUFFICIENT CAPACITY TO RESIST ALL NEWLY APPLIED LOADINGS IN ADDITION TO EXISTING LOADINGS. THE ANALYSIS WAS BASED ON ORIGINAL STRUCTURAL DRAWINGS OF THE BUILDING, DATED 1972. THE UNDERSIDE OF THE ROOF SLAB WAS INSPECTED IN AREAS WHERE NEW UNITS ARE TO BE INSTALLED SHOWING NO APPARENT DAMAGE. REPAIR OR REINFORCEMENT OF THE ROOF SLAB IS THEREFORE NOT REQUIRED AT THIS TIME.

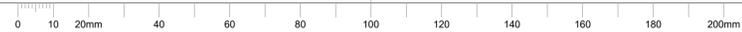
No.	Date	Revision	By:	Par:
3	AUGUST 2019	ISS. FOR TENDER R1		TP/CG
2	JULY 2019	ISS. FOR TENDER		TP/CG
1	JUNE 2019	ISS. FOR AIRPORT AUTHORITY APPROVAL		TP/CG
0	16 APR 2019	ISSUED FOR COMMENTS		TP/CG

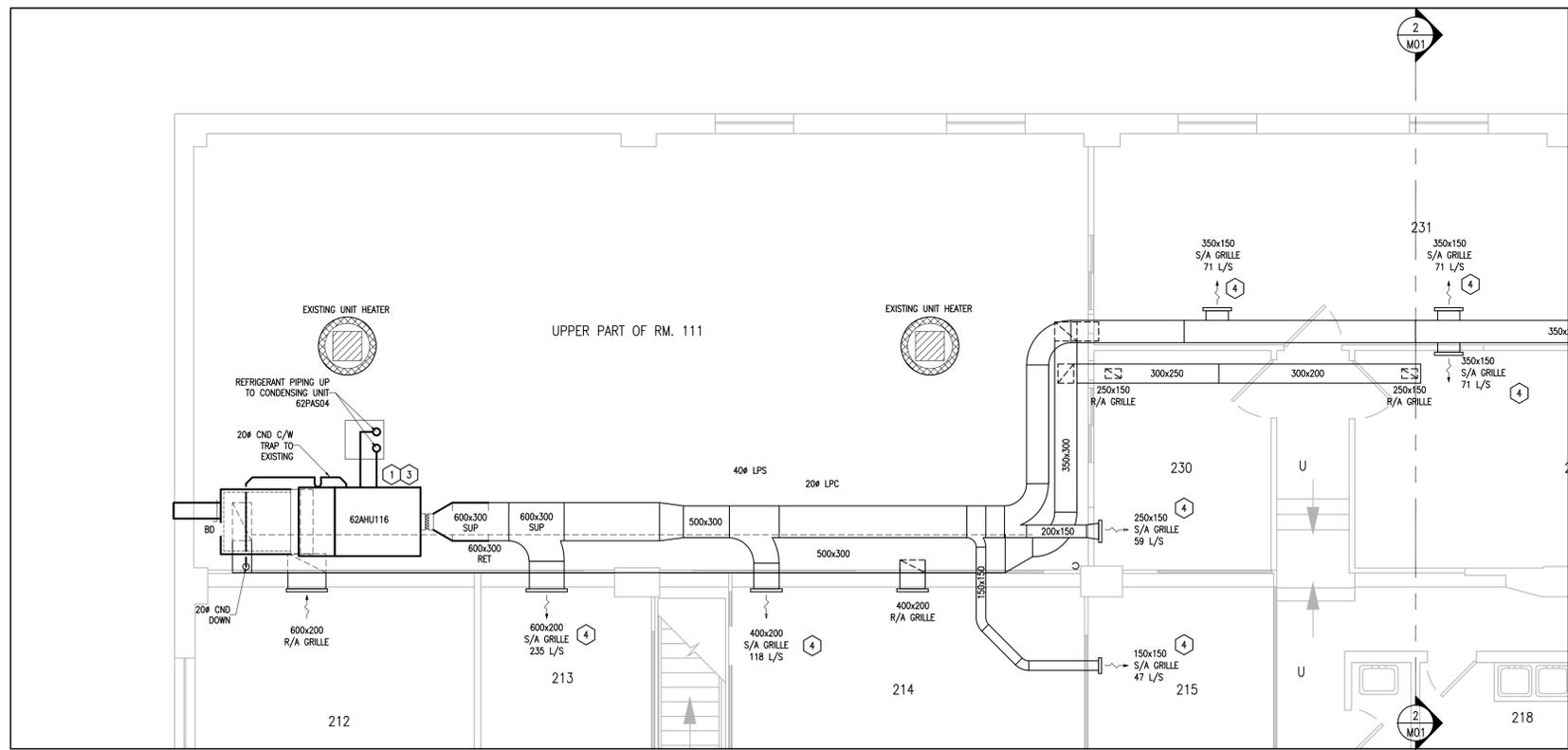


<input type="radio"/> Verify all dimensions and site conditions and be responsible for same <input type="radio"/> Vérifier toutes les dimensions et l'état des lieux et en assumer la responsabilité	A Detail no. No. du détail B Location drawing no. sur dessin no. C Drawing no. dessin no.
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project
U-62 : HVAC REPLACEMENT OF AIR HANDLING UNITS (62AHU 111 AND 62AHU 120)
 UPLANDS CAMPUS
 drawing
AIR HANDLING UNIT SUPPORT FRAME, STRUCTURAL DETAILS
 dessin

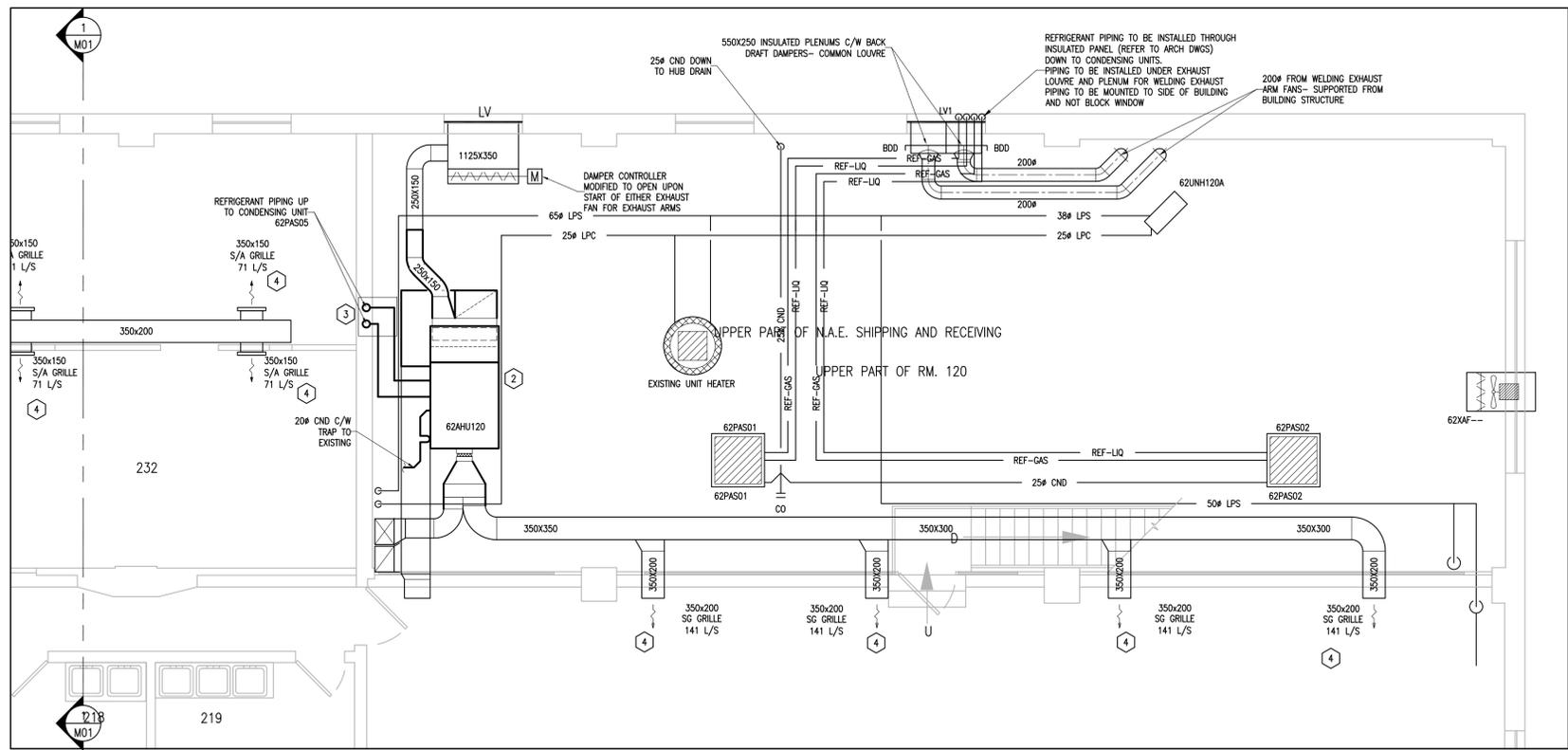
designed	conçu	date	JULY 2019	date
C.G.				
drawn	dessiné	scale	AS SHOWN	échelle
T.P.				
checked	vérifié	sheet	1 of 1	feuille
C.G.				
approved	approuvé	W.O.no.	011227-08-01	D.T.no.
C.G.				
dwg. no.	2547-S200E			dessin no.
Acad File:	XXXXX			fichier CDAO





1
M01
U-62 MEZZANINE PART PLAN- WEST
MECHANICAL NEW WORK

SCALE: 1:50



2
M01
U-62 MEZZANINE PART PLAN- EAST
MECHANICAL NEW WORK

SCALE: 1:50

MECHANICAL DRAWING NOTES:

1. PROVIDE NEW AIR HANDLING UNIT 62AHU116, ASSOCIATED SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, OUTDOOR AIR DUCTWORK, FILTERS, REFRIGERANT PIPING, CONDENSATE PIPING AND ALL REQUIRED ACCESSORIES. REUSE EXISTING WALL PENETRATION AND OUTDOOR AIR DUCTWORK. CONNECT NEW SUPPLY AND RETURN AIR DUCTWORK TO EXISTING SUPPLY AIR AND RETURN AIR DUCTWORK AS INDICATED.
2. PROVIDE NEW AIR HANDLING UNIT 62AHU120, ASSOCIATED SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, RETURN PLENUM, OUTDOOR AIR DUCTWORK, FILTERS, REFRIGERANT PIPING, CONDENSATE PIPING AND ALL REQUIRED ACCESSORIES. CONNECT NEW SUPPLY AND RETURN AIR DUCTWORK TO EXISTING SUPPLY AIR AND RETURN AIR DUCTWORK AS INDICATED.
3. PROVIDE NEW REFRIGERANT PIPING FROM NEW AIR HANDLING UNITS UP TO REMOTE CONDENSING UNITS LOCATED ON ROOF (REFER TO DRAWING M02). INSULATE REFRIGERANT LINES AS PER SPECIFICATIONS.
4. TEST, ADJUST AND BALANCE EXISTING SUPPLY AIR GRILLES TO AIR QUANTITIES INDICATED.

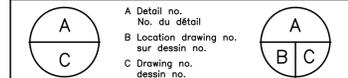


GENERAL NOTES

- CONTRACTORS TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO DEMOLITION OR CONSTRUCTION AND REPORT ANY ERRORS OR OMISSIONS TO DEPARTMENTAL REPRESENTATIVE.
- CONTRACTORS MUST VISIT THE SITE & FULLY FAMILIARIZE THEMSELVES WITH THE SCOPE OF THE WORK.
- PREVENT THE SPREAD OF DUST & DEBRIS BEYOND THE WORK AREA AND CLEAN ALL SURFACES AT COMPLETION.
- MAKE GOOD ALL SURFACES AFFECTED BY THIS WORK.
- COORDINATE ALL SHUTDOWNS WITH THE DEPARTMENTAL REPRESENTATIVE.
- PROVIDE ALL LABOUR AND MATERIAL REQUIRED TO FORM A COMPLETE, FUNCTIONAL SYSTEM AS DESCRIBED ON DRAWINGS.

0	OCT 2018	ISSUED FOR TENDER	JWG
No.	Date	Revision	By:
			Par:
Date Printed: DD MM YYYY		Date imprimée:	

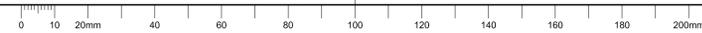
- Verify all dimensions and site conditions and be responsible for same
- Vérifier toutes les dimensions et l'état des lieux et en assumer la responsabilité

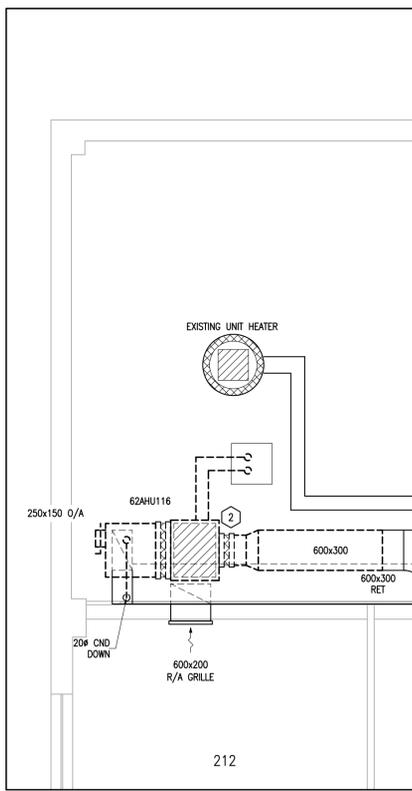


project
BUILDING U-62
REPLACEMENT OF AIR HANDLING UNITS 62AHU111 AND 62AHU 120
UPLANDS CAMPUS
drawing
MEZZANINE LEVEL MECHANICAL NEW WORK

designed	JWG	conçu	date	Aug. 2019	date
drawn	JWG	dessiné	scale	AS INDICATED	échelle
checked	ZM	vérifié	sheet	1 of/de 3	feuille
approved	ALS	approuvé	W.O.no.	A1-011227	D.T.no.

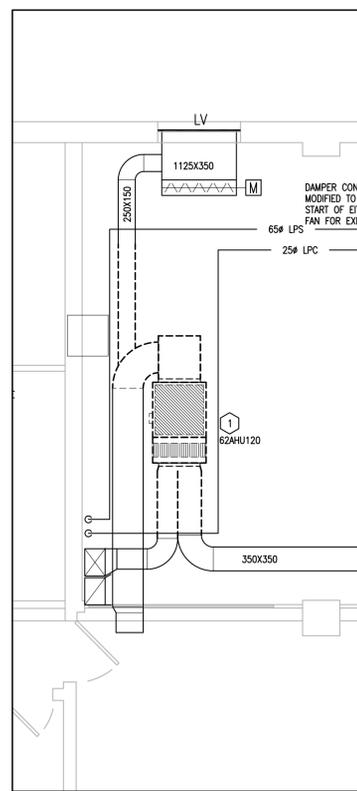
dwg.no. 5247-M01
dessin no.





1
M02
U-62 MEZZANINE PART PLAN- WEST
MECHANICAL DEMOLITION

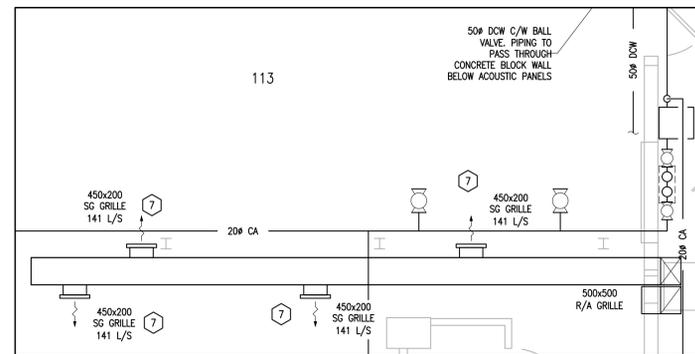
SCALE: 1:50



2
M02
U-62 MEZZANINE PART PLAN- EAST
MECHANICAL DEMOLITION

SCALE: 1:50

- MECHANICAL DRAWING NOTES:** (X)
- ISOLATE, DISCONNECT AND REMOVE AIR HANDLING UNIT 62AHU120, ASSOCIATED SUPPLY, RETURN AND OUTDOOR (OA) DUCTWORK, CONTROLS (PNEUMATIC DAMPER ON OA DUCTWORK) AND PIPING AS INDICATED.
 - ISOLATE, DISCONNECT AND REMOVE AIR HANDLING UNIT 62AHU116, ASSOCIATED SUPPLY, RETURN AND OUTDOOR (OA) DUCTWORK, CONTROLS (PNEUMATIC DAMPER ON OA DUCTWORK) AND PIPING AS INDICATED.
 - DRAIN ALL REFRIGERANT AND OIL FROM EXISTING ROOF TOP CONDENSING UNITS 62PAS111 AND 62PAS120, PROVIDE COPY OF OZONE DEPLETION PREVENTION CERTIFICATE INDICATING TYPE AND QUANTITY OF OIL AND REFRIGERANT REMOVED. DISPOSE OF UNIT AND MATERIAL IN ACCORDANCE WITH APPLICABLE ENVIRONMENT REGULATIONS.
 - PROVIDE FLASHING ON EXISTING ROOF CURBS AS THIS CURBS IS NOT TO BE REUSED.
 - PROVIDE NEW ROOF CURBS FOR NEW CONDENSING UNITS 62PAS04 AND 62PAS05 AS INDICATED (REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION).
 - PROVIDE NEW CONDENSING UNITS 62PAS04 AND 62PAS05 AS INDICATED. PROVIDE REFRIGERANT PIPING FROM CONDENSING UNITS TO NEW AIR HANDLING UNITS (REFER TO DRAWING M01 FOR LOCATIONS OF AIR HANDLING UNITS IN MEZZANINE AREAS), DISCONNECTS AND REQUIRED FITTINGS AND ACCESSORIES. REUSE EXISTING ROOF PENETRATIONS FOR ROUTING OF ALL SERVICES.
 - TEST ADJUST AND BALANCE EXISTING SUPPLY DIFFUSERS IN ROOM 113 TO AIR QUANTITIES INDICATED.
 - REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS AND CONSTRUCTION OF ROOF CURBS



3
M02
U-62 GROUND FLOOR ROOM113
AIR BALANCING

SCALE: 1:50

MECHANICAL DRAWING LIST	
DWG NO.	DRAWING TITLE
5247-M01	MECHANICAL NEW WORK AND DRAWING LIST
5247-M02	MECHANICAL DEMOLITION, SCHEDULES, LEGEND, DETAILS AND PHOTOS

MECHANICAL LEGEND	
SYMBOL	DESCRIPTION
	GATE VALVE
	BALL VALVE
	PIPE UP
	PIPE DOWN
	SANITARY TRAP
	CLEAN-OUT
	UNION
	CAP
	FLOOR CLEAN OUT
	FLOOR DRAIN
	FIRE EXTINGUISHER
	RECTANGULAR DUCTWORK
	ROUND SPIRAL DUCTWORK
	ROUND TAKE-OFF
	90° ELBOW
	45° ELBOW
	TRANE UNIT HEATER 1- EXISTING
	TRANE UNIT HEATER 2- EXISTING
	TRANE UNIT HEATER 3- EXISTING
	AIR HANDLING UNIT- EXISTING
	T-STAT (DDC)
	AC UNIT CONTROLLER
	MOTORIZED DAMPER MOTOR
	T-STAT (PNEUMATIC)
	UNIT HEATER ON/OFF SWITCH

MECHANICAL LINE TYPE LEGEND	
LINE	DESCRIPTION
	DOMESTIC COLD WATER
	COMPRESSED AIR
	LOW PRESSURE STEAM
	LOW PRESSURE CONDENSATE
	VACUUM FAN EXHAUST DUCT- INSTALLED BY CLIENT
	INDICATES NEW
	INDICATES EXISTING (TO REMAIN)
	INDICATES DEMOLISHED/ REMOVED

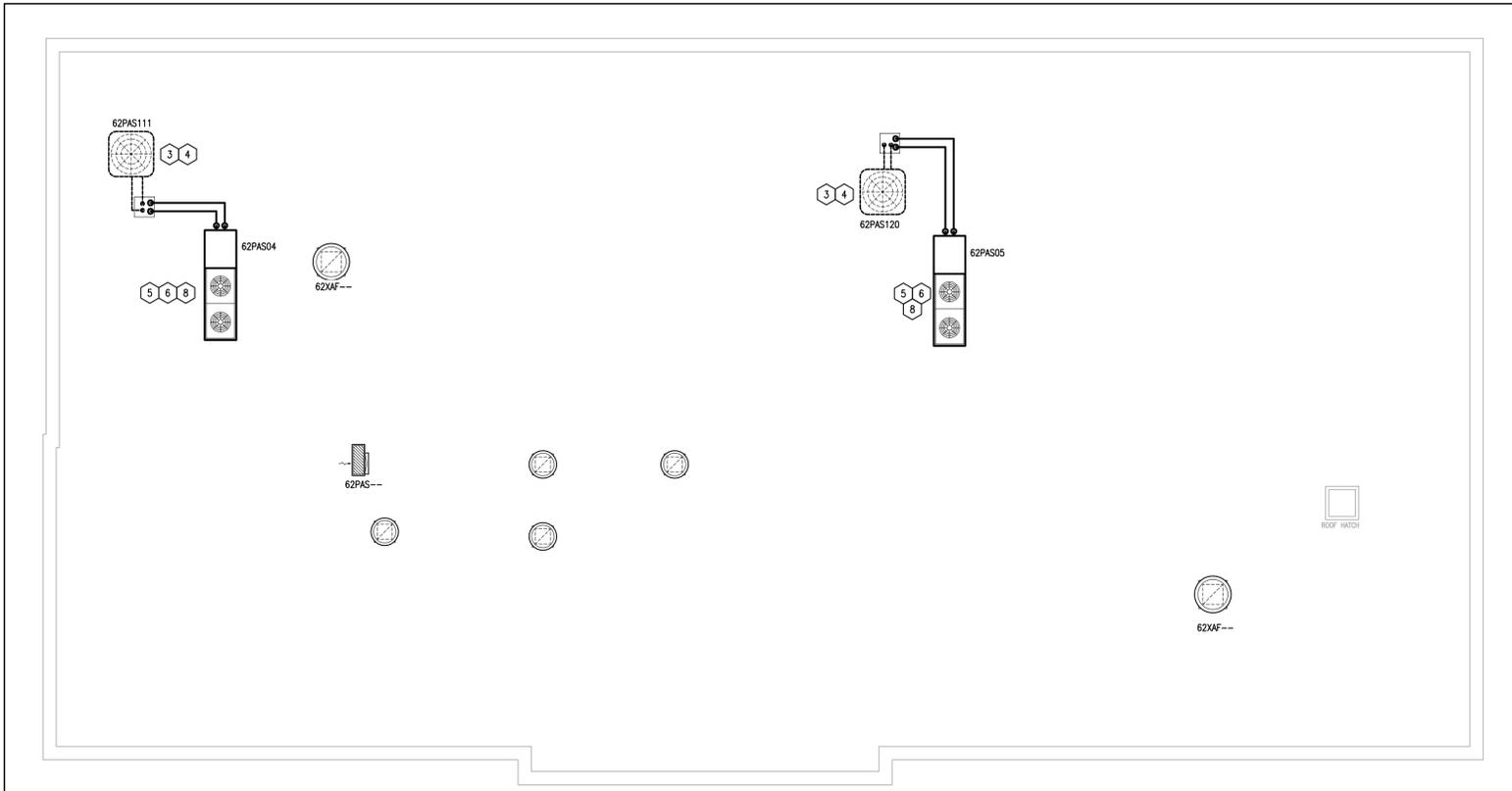
National Research Council Canada
Administrative Services and Property Management Branch

Conseil national de recherches Canada
Division des services administratifs et gestion de l'immobilier



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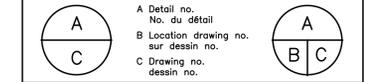


4
M02
U-62 FULL ROOF PLAN
MECHANICAL DEMOLITION AND NEW WORK

SCALE: 1:100

0	OCT 2018	ISSUED FOR TENDER	JWG
No.	Date	Revision	By:
			For:
Date Printed: DD MM YYYY		Date imprimée:	

- Verify all dimensions and site conditions and be responsible for same
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project: **BUILDING U-62 REPLACEMENT OF AIR HANDLING UNITS 62AHU111 AND 62AHU 120**

project: **UPLANDS CAMPUS**

drawing: **MEZZANINE MECHANICAL DEMOLITION, ROOF MECHANICAL REWORK PLAN, SCHEDULES AND LEGEND**

designed: **JWG** conçu: **JWG** date: **AUG. 2019** date:

drawn: **JWG** dessiné: **JWG** scale: **AS INDICATED** échelle:

checked: **ZM** vérifié: **ZM** sheet: **2** of/de: **3** feuille:

approved: **ALS** approuvé: **ALS** W.O.no.: **A1-011227** D.T.no.:

dwg.no.: **5247-M02** dessin no.:

AIR HANDLING UNIT SCHEDULE																																	
TAG	LOCATION	SUPPLY			RETURN			DX COOLING COIL CAPACITIES					HEATING CAPACITIES - STEAM					HUMIDIFIER		AHU ELECTRICAL		AHU OUTDOOR CONDENSING UNIT				REMARKS							
		AIR FLOW L/S MAX	S.P. (Pa) TSP	FILTER (MM)	AIR FLOW L/S MAX	AIR FLOW L/S MIN	O.A. L/S MAX	T.C. (KW)	T.C. (KW)	EDBT	EWBT	LDBT	ROWS	CIRCUIT	AIR VELOCITY (M/S)	CAPACITY (KW)	EDBT (°C)	P.D. (Pa)	LDBT	STIM. PRESS. (PS)	COND (KG/HR)	FACE VEL. (M/S)	KG/HR	INJECTOR TYPE	MOTOR(S) (H.P.)		FLA/MFA/MOP	V/P/HZ	TAG	LOCATION	CAPACITY (KW)	FAN(S) HP	FLA/MCA/MOP
62AHU116	MECH. RM.	987	403	50	888	790	197	26.7	17.3	29.4°C	19.4°C	12.8°C	5	1	1.87	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.5	1.7/---/---	600/3/60	62PAS---	ROOF	26.8	2X 1HP	3/15/20	600/3/60	NEW
62AHU120	SHOP	987	403	50	888	790	197	26.7	17.3	29.4°C	19.4°C	12.8°C	5	1	1.87	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.5	1.7/---/---	600/3/60	62PAS---	ROOF	26.8	2X 1HP	3/15/20	600/3/60	NEW

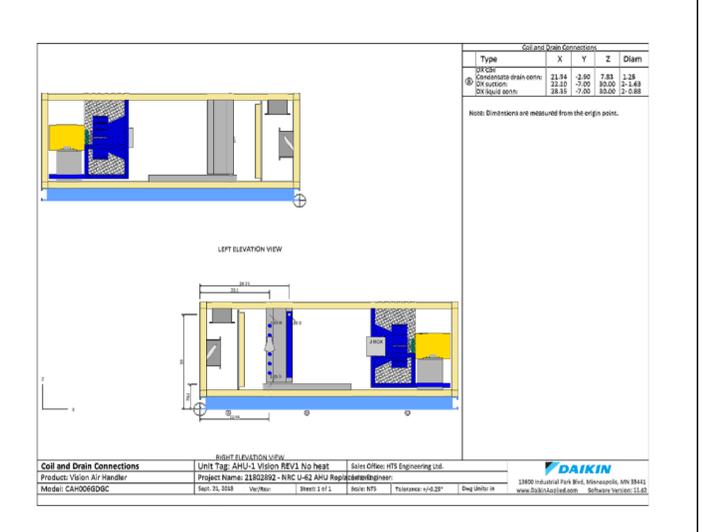
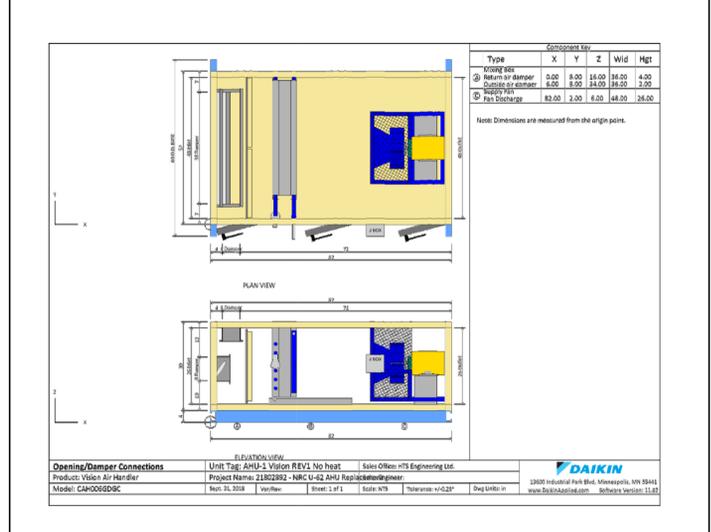
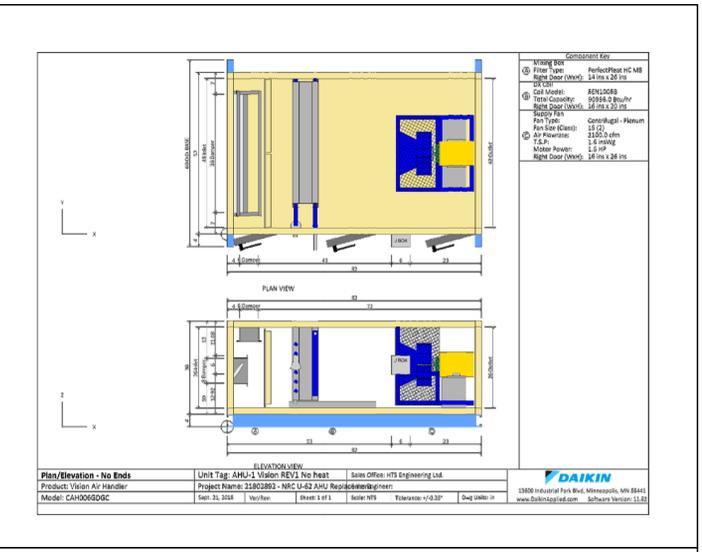
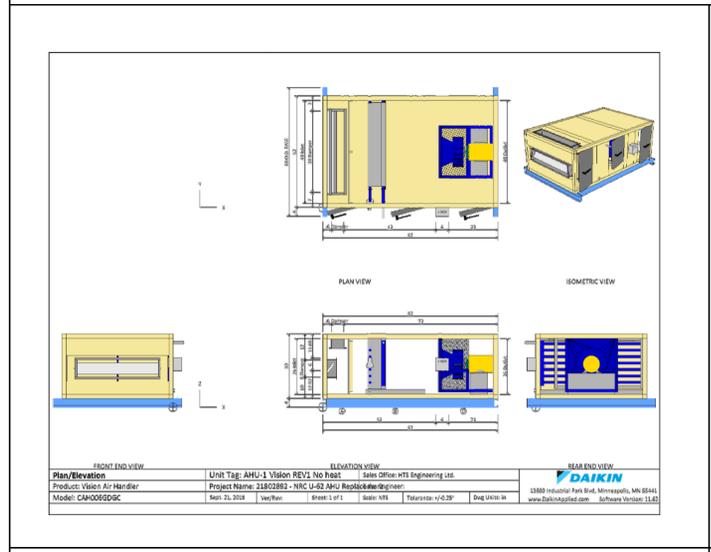
NOTE:
 1. AIR HANDLING UNITS ARE BASED ON DAIKIN VISION MODEL CAH06GDC C/W REPLUS OUTDOOR CONDENSING UNIT MODEL OMZ-095-1H1-8DZ. REFER TO SPECIFICATIONS AND DETAILS BELOW FOR ADDITIONAL INFORMATION. UNIT SHALL BE CEILING HUNG C/W SEISMIC SUPPORT AND VIBRATION ISOLATION.
 2. FOR ADDITIONAL ELECTRICAL INFORMATION REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS.
 3. ALL CONTROLS WORK TO INTERCONNECT TO THE BAS SHALL BE PERFORMED BY THE CONTROLS CONTRACTOR. CONTROLS CONTRACTOR IS ANSWORTH (CONTACT AARON DOBSON: 613-247-7938)

National Research Council Canada
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No.	Date	Revision	By:
			Drawn:

Date Printed: DD MM YYYY Date imprimée

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project
BUILDING U-62
REPLACEMENT OF AIR HANDLING UNITS 62AHU111 AND 62AHU 120
 UPLANDS CAMPUS
 drawing
MEZZANINE MECHANICAL DEMOLITION, ROOF MECHANICAL REWORK PLAN, SCHEDULES AND LEGEND

designed	JWG	conçu	date	AUG. 2019	date
drawn	JWG	dessiné	scale	AS INDICATED	échelle
checked	ZM	vérifié	sheet	3 of/de 3	feuille
approved	ALS	approuvé	W.O.no.	A1-011227	D.T.no.

5247-M03