

## PROCUREMENT SERVICES SECTION 13450 – 104 Avenue, Surrey BC V3T 1V8 Tel: 604-590-7274

**ADDENDUM #2** 

E-mail: purchasing@surrey.ca

REQUEST FOR QUOTATIONS (RFQ) NO.: 1220-040-2019-098

TITLE: SUPPLY, DELIVERY AND INSTALLATION OF HVAC

**REPLACEMENT - SURREY ARTS CENTRE** 

ADDENDUM ISSUE DATE: December 5, 2019

**CLOSING DATE:** prefer to receive Quotations on or before:

**December 12, 2019** 

## INFORMATION FOR CONTRACTORS

This Addendum is issued to provide additional information to the RFQ for the above named project, to the extent referenced and shall become a part thereof. No consideration will be allowed for extras due to the Contractor not being familiar with this Addendum. This Addendum No. 2 contains 11 pages in total.

## **REVISIONS:**

- 1) Contractors are to refer to the attached Addendum No. M1 for revisions to the Mechanical Specifications and Drawings as prepared by the Consultant dated December 04, 2019.
- 2) Contractors are to refer to the attached Addendum No. E1 for revisions to the Electrical Specifications and Drawings as prepared by the Consultant dated December 05, 2019.

## **END OF ADDENDUM #2**

All Addenda will become part of the RFQ Documents.



# ADDENDUM NO. M1

TO: City of Surrey PAGE: 1 of 2

DATE: December 04, 2019

PROJECT NO.: 19-172
CONTRACT: Mechanical

DISTRIBUTION:

ATTN: Farhad Alizadeh Prime Consultant (x)

PROJECT: Surrey Art Center HVAC Replacement Gen. Contractor (x)

Mech. Contractor (x)

13750 88<sup>th</sup> Ave Elect. Contractor ( )
Surrey BC Resident Eng. ( )

File (X)
Other ()

ISSUED BY Lovejit Buttar

#### TO ALL BIDDERS OF RECORD

#### 1. GENERAL

- 1.1 This addendum is issued pre "RFQ" Proposal closing to provide for certain revisions as noted herein.
- 1.2 All such revisions will become part of the Work and the effects shall be included in the Proposal price.
- 1.3 All work shall be performed in accordance with the Contract Documents.

#### 2. AHU-2 REVISION

- 2.1 AHU-2 model is to be revised to FEW-224-COR. AHU-2 is to be provided complete with:
  - 16 ga. satin coated galvanized sheet metal casing c/w 2", 3lb.ft<sup>3</sup> semi ridged insulation
  - 16 ga.. satin coated galvanized sheet metal floor
  - Air side access doors hinged c/w lever lock handles
  - Service doors (electrical & compressors) hinged c/w lever lock handles
  - Supply motor and fan to have seismic spring vibration isolation c/w extended grease lines – both to exterior casing and pillow block bearings
  - Drives to have a 1.0 service factor
  - Alternate tube circuited DX coil c/w hot gas bypass on lead compressor and stainless steel drain pan



 DATE:
 December 04, 2019
 PROJECT NO.:
 19-172

 PAGE:
 2 of 2
 CONTRACT NO.:
 Mechanical

- Piping vestibule for hot water coil
- Filter gauge 0-2 in-wc.

# 3. MISCELLANEOUS

- 3.1 Commissioning of new equipment is to be removed from the contractor's scope of work.
- 3.2 Contractor to allow for the replacement of AHU-1 & AHU-3 spring isolators with new.
- 3.3 Chemical treatment provider is to be: Pace Chemical's ltd.
- 3.4 Base building roofing contractor is: Marine Roofing. Alternate RCABC certified roofing contractors are acceptable.
- 3.5 Contractor to allow for the re/re of one additional sprinkler head in mechanical room.
- 3.6 Heating water line serving AHU-1 & AHU-3 are to be provided a by-pass complete with three-way control valve.
- 3.7 Refer to the attached drawings

## 4. AHU-3 OUTDOOR UNIT

- 4.1 AHU-3 is to be provided three 5 ton outdoor units in lieu of two 7.5 ton units. New outdoor units are to be installed in existing cage in lieu of the roof, allow for the extension of existing house keeping pad to suit new outdoor unit installation
- 4.2 New refrigerant lines are to be routed below ground to the mechanical room. Underground refrigerant lines are to be routed through plastic pipes for protection
- 4.3 Allow for water proofing at the refrigerant line's penetration into the building.
- 4.4 AHU-1 is to be provided a cooling coil complete with 3 evenly sized circuits.
- 4.5 Refer to the attached drawings.

-END-

# GENERAL NOTES

1. BASE BUILDING ROOFING CONTRACTOR SHALL BE HIRED BY THE MECHANICAL CONTRACTOR TO CARRY OUT ANY REQUIRED ROOFING WORK. BASE BUILDING ROOFING CONTRACTOR IS: MARINE ROOFING. ALTERNATE CERTIFIED ROOFING CONTRACTORS ARE ACCEPTABLE.

- 2. CONTRACTOR TO RETAIN STRUCTURAL ENGINEER TO REVIEW LOCATION OF EQUIPMENTS AND PROVIDED STRUCTURAL DESIGN COMPLETE WITH LETTERS OF ASSURANCE AS REQUIRED.
- 3. ALLOW FOR RE-CONNECTION OF SUPPLY AND RETURN MAINS. ALLOW FOR NECESSARY DUCT TRANSITIONS TO SUIT.
- 4. ALLOW FOR ALL NECESSARY EQUIPMENT HOISTING AND THE USE OF INDUSTRIAL MOVERS.
- 5. NEW ROOF TOP UNITS TO BE PROVIDED UV RESISTANT LAMACOIDS.
- 6. ALLOW FOR PROPER REFRIGERANT AND OIL RECOVERY AND ENVIRONMENTALLY FRIENDLY. REMOVED EQUIPMENT IS TO BE DISPOSED OF BY CONTRACTOR WITHIN ENVIRONMENTALLY FRIENDLY PRACTICE AND TO ALL CITY OF SURREY GUIDELINES, PROVIDE OIL AND HALOCARBON DISPOSAL CERTIFICATES. DISCONNECT ALL GAS HEATING LINES AND PROVIDE CAPS DURING REPLACEMENT.
- 7. RECONNECT GAS LINES TO SUIT NEW UNITS AND ALLOW FOR REPLACEMENT OF ROOFTOP UNIT GAS PRVS. CONTRACTOR TO FILL OUT MANUFACTURER'S START UP SHEETS AT THE END OF THE JOB.
- 8. LOCATION OF EXISTING EQUIPMENT SHOWN ON THIS DRAWING IS FOR INFORMATION ONLY. CONTRACTOR SHOULD REVIEW AND CHECK THE EXACT LOCATION, SIZE, ELEVATION AND INVERT OF ALL EXISTING EQUIPMENT AND DUCTWORK ON SITE PRIOR TO COMMENCING WITH WORK.

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<del>\_\_\_</del>

ROUND DUCT (UP, DOWN)

CAPPED OFF EXISTING DUCT.

DUCT TRANSITION, SINGLE LINE DUCT

SUPPLY DIFFUSER, NEW/EXISTING

RETURN GRILLE, NEW/EXISTING

HORIZONTAL/VERTICAL DUCT

CONTINUATION OF DUCTWORK

NEW VARIABLE SPEED SWITCH

EQUIPMENT TAG FOR HVAC

QUANTITY A = CFM

DOUBLE/SINGLE LINE

NEW CONTROL WIRING

NEW THERMOSTAT

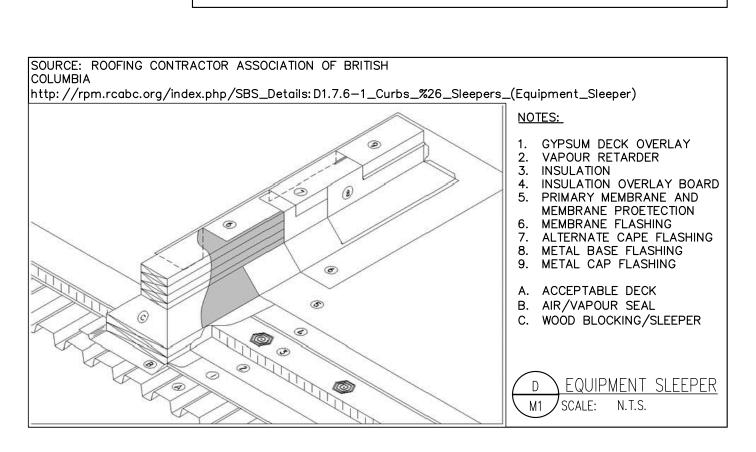
BALANCING DAMPER

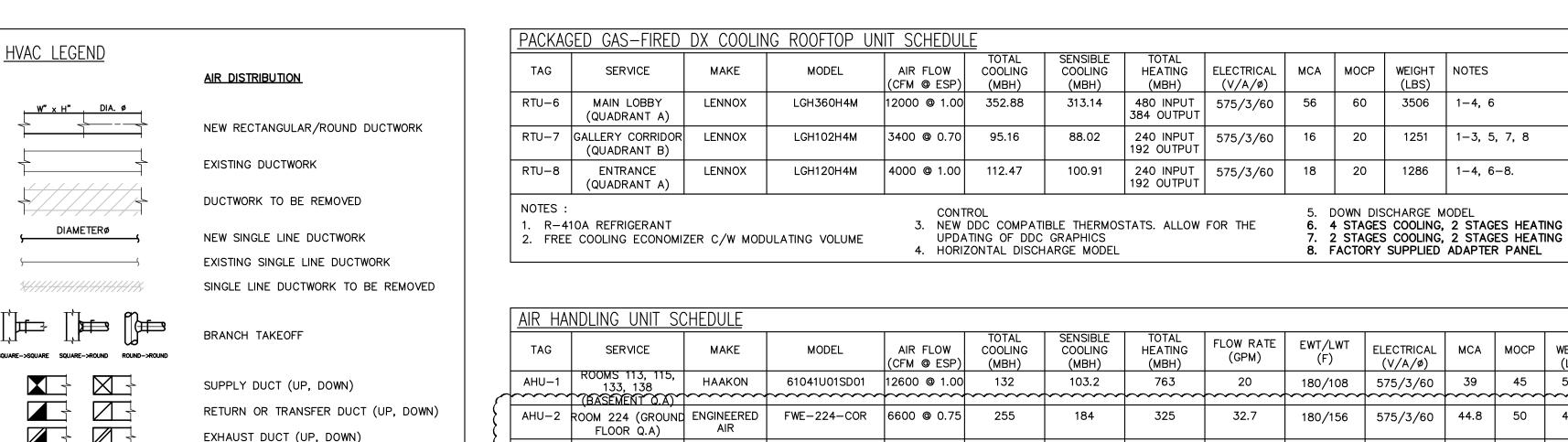
FIRE DAMPER

**CONTROLS** 

- 9. MECHANICAL CONTRACTOR IS TO SEND A COMPLETE SET OF DRAWINGS TO THEIR SUB-TRADES ANY SUPPLIERS AT TIME OF TENDER. NO CHANGES WILL BE CONSIDERED BY ANY SUB-TRADE OR SUPPLIER CLAIMING THAT THEY WERE NOT AWARE OF THE COMPLETE PROJECT SCOPE.
- 10. CONTRACTOR TO PROVIDE SEISMIC RESTRAINT AND SEISMIC ENGINEER LETTER OF ASSURANCE FOR ALL NEW AND REPLACED MECHANICAL EQUIPMENT.
- 11. ALL CONTROLS WORK TO BE BY ESC AUTOMATION. EXISTING CONTROLS SEQUENCE IS TO BE MAINTAINED (EXISTING CONTROLS SEQUENCE DOCUMENTATION IS NOT AVAILABLE). CONTROLS CONTRACTOR TO PROVIDE AS—BUILT CONTROLS SEQUENCE AS PART OF THE CLOSE OUT DOCUMENTS AT THE END OF THE JOB.
- 12. COORDINATE WITH ALL OTHER DISCIPLINES.
- 13. CONTRACTOR TO ALLOW FOR OBTAINING ALL REQUIRED PERMITS (ELECTRICAL, REFRIGERATION ETC.).
- 14. NEW EQUIPMENT TO BE STARTED-UP AND COMMISSIONED.
- 15. CONTRACTOR TO REVIEW AND RE-ESTABLISH HEATING WATER SYSTEM'S CHEMICALS. CHEMICAL TREATMENT PROVIDER IS TO BE: PACE CHEMICALS

# PLUMBING LEGEND **PLUMBING** DIRECTION OF FLOW NEW HEATING WATER SUPPLY LINE ---- HWR ----NEW HEATING WATER RETURN LINE ——— RFGS ——— NEW REFRIGERANT SUPPLY LINE ———— RFGR ———— NEW REFRIGERANT RETURN LINE ------ HWS ------EXISTING HEAT WATER SUPPLY LINE EXISTING HEATING WATER RETURN LINE ---- HWR ----EXISTING REFRIGERANT SUPPLY LINE ———— RFGR ———— EXISTING REFRIGERANT RETURN LINE EXISTING DCW ----- DCW -----EXISTING DHW ———— DHW ——— EXISTING SANITARY LINE ----- SAN -----EXISTING SPRINKLER LINE ------ SPRN ----PIPE REDUCER PIPE CAPPED-OFF CHECK VALVE ISOLATION VALVE BALANCING VALVE EXISTING PENDENT SPRINKLER HEAD EXISTING UPRIGHT SPRINKLER HEAD





TAG	SERVICE	MAKE	MODEL	AIR FLOW (CFM @ ESP)	TOTAL COOLING (MBH)	SENSIBLE COOLING (MBH)	TOTAL HEATING (MBH)	FLOW RATE (GPM)	EWT/LWT (F)	ELECTRICAL (V/A/ø)	MCA	моср	WEIGHT (LBS)	NOTES
AHU-1	ROOMS 113, 115, 133, 138	HAAKON	61041U01SD01	12600 @ 1.00	•	103.2	763	20	180/108	575/3/60	39	45	5920	1-4, 6-9
AHU-2	(BASEMENT Q.A) ROOM 224 (GROUND FLOOR Q.A)	ENGINEERED AIR	FWE-224-COR	6600 @ 0.75	255	184	325	32.7	180/156	575/3/60	44.8	50	4400	1-3, 5, 8, 10
AHU-3	THEATER (GROUND FLOOR Q.A)	~HAAKON~	~~61041U03SD01~	<del>8000 @ 0.8</del>	~~ <del>188</del> ~~	~~ <del> 38</del> ~~	~~ <del>49</del> 5~~	20~~	180/132	575/3/60	~~31~	45~	~ <del>478</del> 0~	4 <u>-4, 8-8</u> ~~
CU-1	AHU-1	TRANE	TWA1204WDAB-AR	_	118	_	_	_	_	575/3/60	15	20	439	11
CU-1 SEPARATE RICE \$B)		TRANE	TWA1804WDAB-AR		188		~~~~		~~~~	575/3/60	25	30	764	11
CU-3A	AHU-3	TRANE	NH4H460ALA	-	60	_	_	_	_	575/3/60	10.6	15	258	11
CU-3B	AHU-3	TRANE	NH4H460ALA	_	60	_	_	_	_	575/3/60	10.6	15	258	11
CU-3C	AHU-3	TRANE	NH4H460ALA	_	60	_	_	_	_	575/3/60	10.6	15	258	11

FACTORY AND REASSEMBLED ON SITE TO 9. BLOCKING OFF OF EXTRA SPACE TO SUIT

PROJ. CLOSE-OUT DOCUMENTS BY CONTRACTOR
1 100. CLOSE OUT DOCOMENTS BY CONTRACTOR
CONTRACTOR IS TO PROVIDE, AT END OF JOB, THE LISTED DOCUMENTS PRIOR TO SIGN OFF
BY THE ENGINEER.
1. ALL NECESSARY INTERIM AND FINAL INSPECTION CERTIFICATES FROM THE CITY OF
SURREY, IF REQUIRED.

\_\_\_\_\_\_

- 2. SCHEDULE B & CB FOR SEISMIC RELATED WORK.
- 3. SCHEDULE B & CB FOR STRUCTURAL.

3. HYDRONIC HEATING

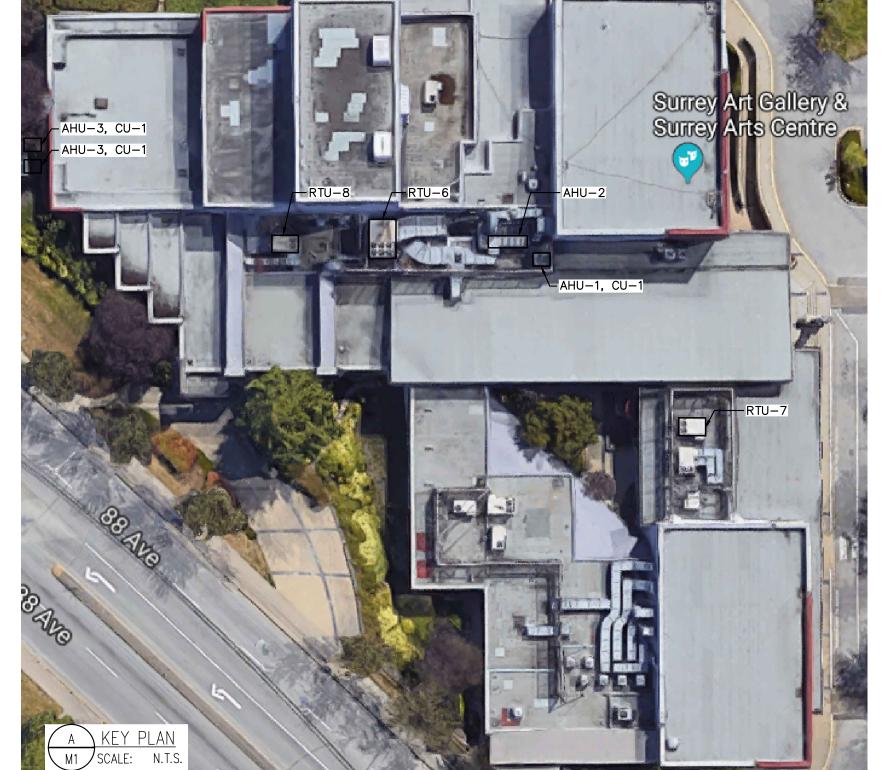
- 4. FIRE STOPPING INSTALLATION CERTIFICATE.
- 5. AS-BUILT DRAWINGS BY CONTRACTOR, IN <u>CAD</u> FORMAT.
  5.1. PROVIDE A SET FOR EACH DISCIPLINE (HVAC, CONTROLS)
- 5.2. INCLUDE STAMP INDICATING WHICH CONTRACTOR PREPARÉD THE MARKUPS WHICH THE AS-BUILT IS BASED.
   5.3. FOR CONTROLS, PROVIDE SCREEN SHOTS OF UPDATED GRAPHICS.
- . COMPLETE O&M MANUAL, IN BINDER FORMAT. INCLUDE NEW EQUIPMENT INFORMATION, PRINT OF CAD AS-BUILT COPIES, LETTERS OF ASSURANCE, WARRANTIES, ETC. TO BE
- SUBMITTED TO MECHANICAL CONSULTANT AND BASE BUILDING RECORDS.

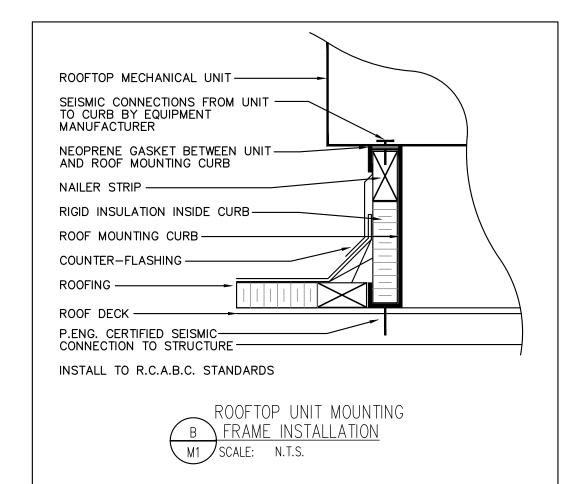
  COPIES OF ALL FINAL INSPECTIONS AND PERMITS ARE TO BE PROVIDED.
- 8. ANY ADDITIONAL DOCUMENTS REQUIRED AND LISTED IN FIELD REPORTS.
- WEEK INDICATION IS TO BE PROVIDED TO ENGINEER THAT MECHANICAL SYSTEM IS COMPLETE AND COMMISSIONED. CONTRACTOR TO PROVIDE CLIENT ORIENTATION OF SYSTEM OPERATION (MECHANICAL AND CONTROLS).

WIT⊦	INSULATE INSIDE OF METAL ENCLOSURE WITH 50mm [2"] RIGID INSULATION.  ATE CAVITY— R10 FIBERGLASS INSULATION.	SHEET METAL ENCLOSURE— CROSS—BREAK OR SLOPE FOR DRAINAGE.
		SHEET METAL COLLAR.  CAULK AND SEAL ALL AROUND COLLAR.
	300mm [12"]	SLOPE COLLAR AND PIPES AWAY FROM HOOD.  — CURB c/w FLASHING
		AND COUNTERFLASHING BY GENERAL CONTRACTOR.  WEATHER PROOF INSULATION
		COVER (REFER TO SPEC)
SHE PAN	T METAL CLOSURE—	ROOFING MEMBRANE BY GENERAL CONTRACTOR.
	CANT STRIP SET IN BITI	IMEN
l FRO	BY GENERAL CONTRACT  IUM 100mm [4"] CLEARANCE—  I PIPE TO TOP OF CURB  IUM 50mm [2"] BETWEEN PIPES.	OR.
NOT	<u>S:</u>	

1. ALL WORK BY DIV. 15, UNLESS OTHERWISE NOTED.

C PIPE PENETRATIONS THROUGH ROOF
M1 SCALE: N.T.S.





		SEPARATE PRICE							
	€∂	CONTRACTOR TO PROVIDE A SEPARATE PRICE FOR THE REPLACEMENT OF EXISTING RETURN AIR FAN (EF-21) WITH NEW, LIKE FOR LIKE. NEW FAN IS TO BE GREENHECK BSQ-240 (1 HP, 1725 RPM, 575V/3PH/60HZ). EXISTING CONTROLS SEQUENCE IS TO BE MAINTAINED.							
	€	CONTRACTOR TO PROVIDE A SEPARATE PRICE FOR THE PROVISION OF A 15 TON CONDENSING UNIT (CU-1) IN LIEU OF A 10 TON UNIT. CONTRACTOR TO ALLOW FOR THE PROVISION OF NEW SLEEPERS AS REQUIRED. CONTRACTOR TO ALLOW FOR STRUCTURAL REVIEW AND DESIGN AS REQUIRED (WEIGHT OF EXISTING UNIT AND NEW 15 TON UNIT ARE COMPARABLE).							
	€0	CONTRACTOR TO PROVIDE A SEPARATE PRICE FOR THE RENTAL OF FIVE 5 TON WATER COOLED HEAT PUMPS TO PROVIDE TEMPORARY COOLING. CONTRACTOR TO ALLOW FOR TEMPORARY ELECTRICAL CONNECTION AND WATER CONNECTIONS. SEPARATE PRICE TO BE BROKEN DOWN TO COST PER UNIT PER MONTH.							
<b>\</b>	<b>₽</b>	CONTRACTOR TO PROVIDE A SEPARATE PRICE FOR THE RENTAL OF THREE 12 TON AIR COOLED HEAT PUMPS TO PROVIDE TEMPORARY COOLING. CONTRACTOR TO ALLOW FOR TEMPORARY ELECTRICAL CONNECTION, FLEX DUCT CONNECTIONS TO EXISTING SUPPLY AIR DUCT ON THE ROOF AND ALSO THE MODIFICATION OF EXISTING SUPPLY AIR DUCTWORK TO ALLOW FOR TEMPORARY FLEX DUCT CONNECTIONS. SEPARATE PRICE TO BE							

BROKEN DOWN TO COST PER UNIT PER MONTH.

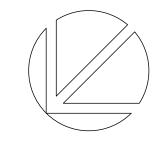


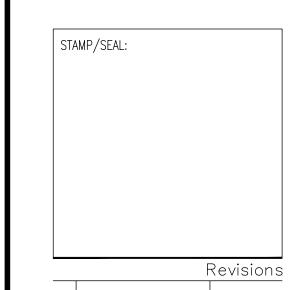
#1080 - 1075 west georgia street vancouver, b.c. V6E 3C9 v.604 609 0500 f. 604 609 0588

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Project:
SURREY ART CENTEROOF TOP UNITS
AND AIR HANDLING
UNITS REPLACEMEN
13750 88TH AVE
SURREY, BC





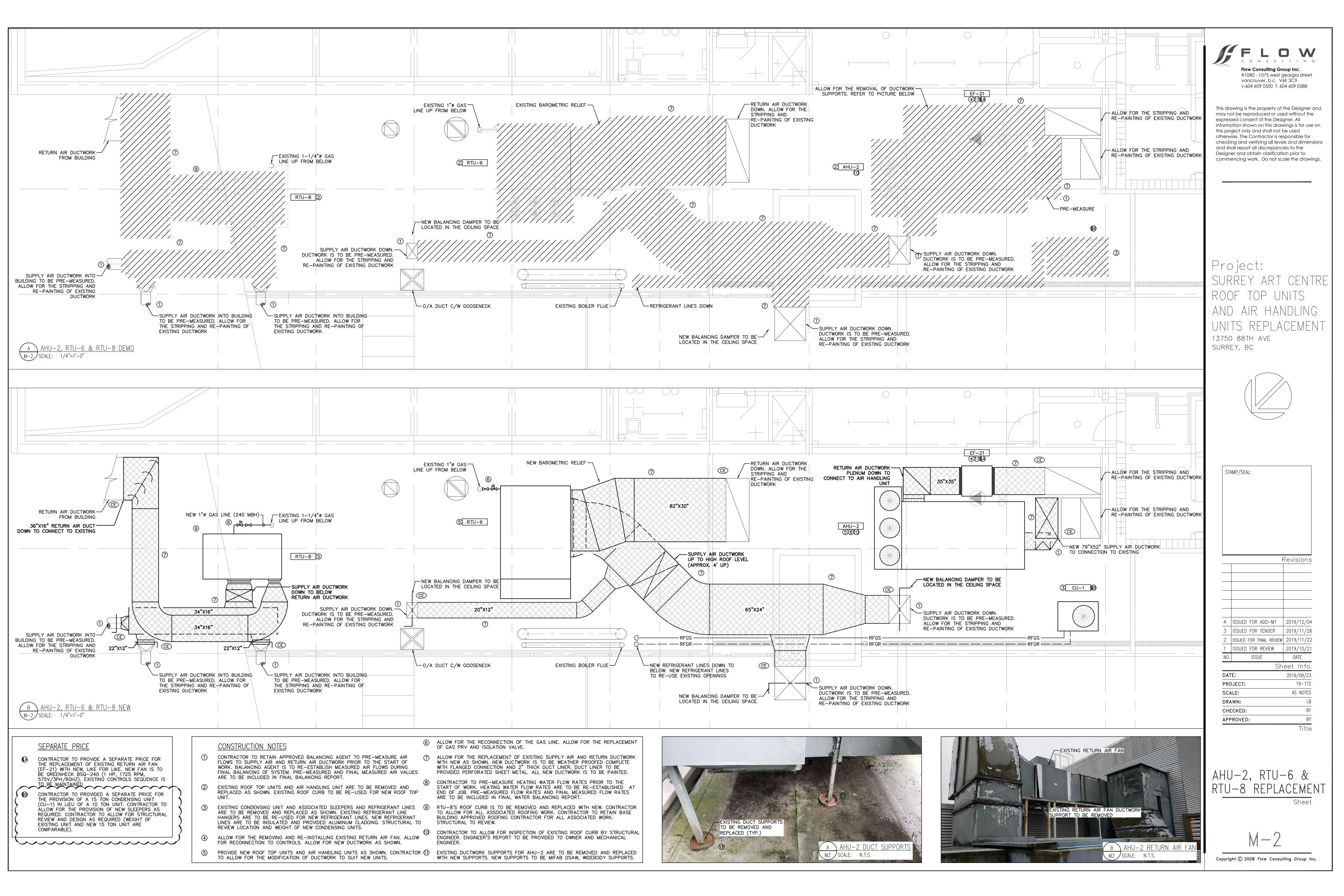
4 ISSUED FOR ADD-M1 | 2019/12/04 3 ISSUED FOR TENDER 2019/11/26 2 | ISSUED FOR FINAL REVIEW | 2019/11/22 1 ISSUED FOR REVIEW | 2019/10/21 ISSUE DATE Sheet Info DATE: 2019/09/23 PROJECT: 19-172 SCALE: N.T.S CHECKED: APPROVED:

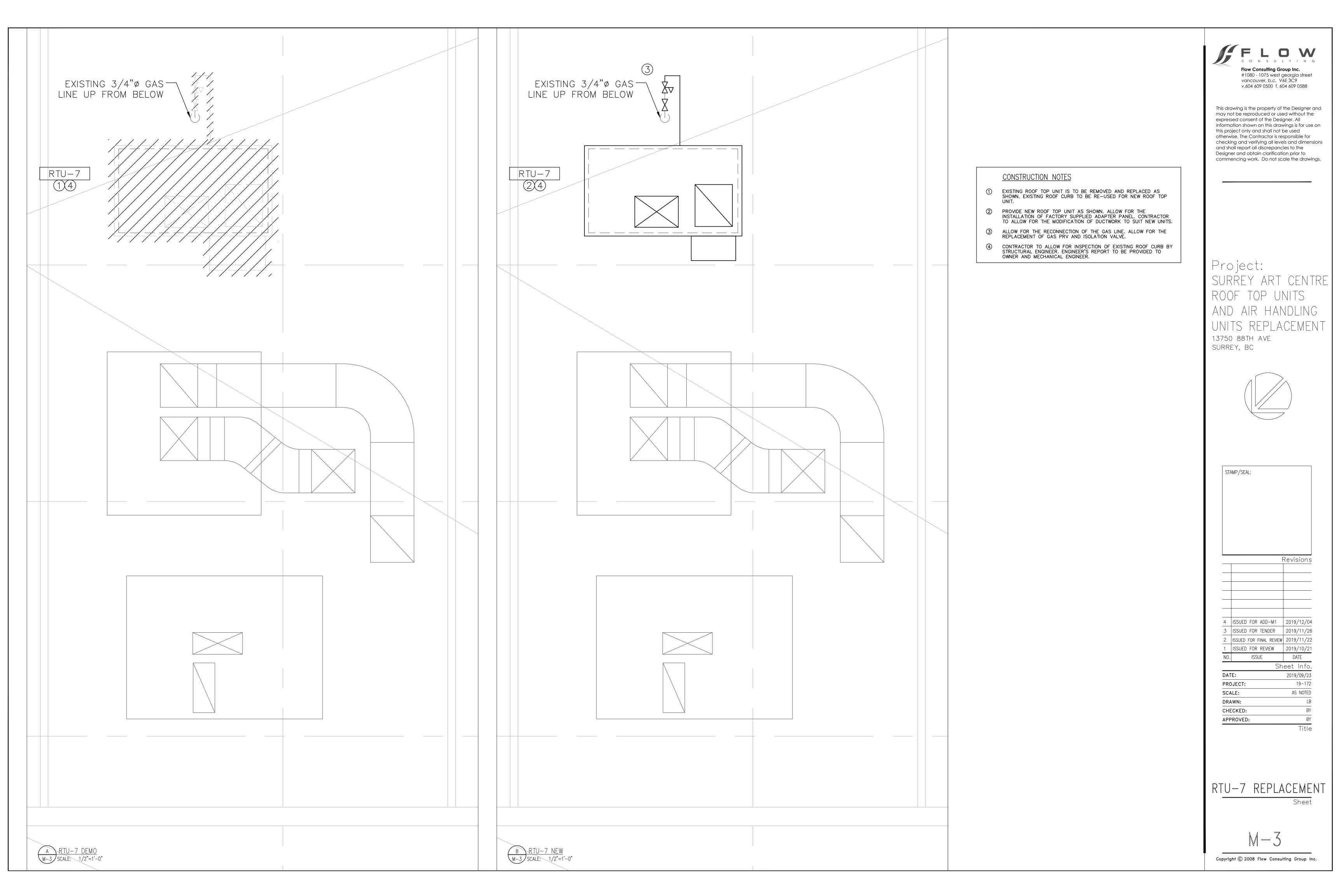
GENERAL NOTES, LEGENDS, SCHEDULES & DETAILS

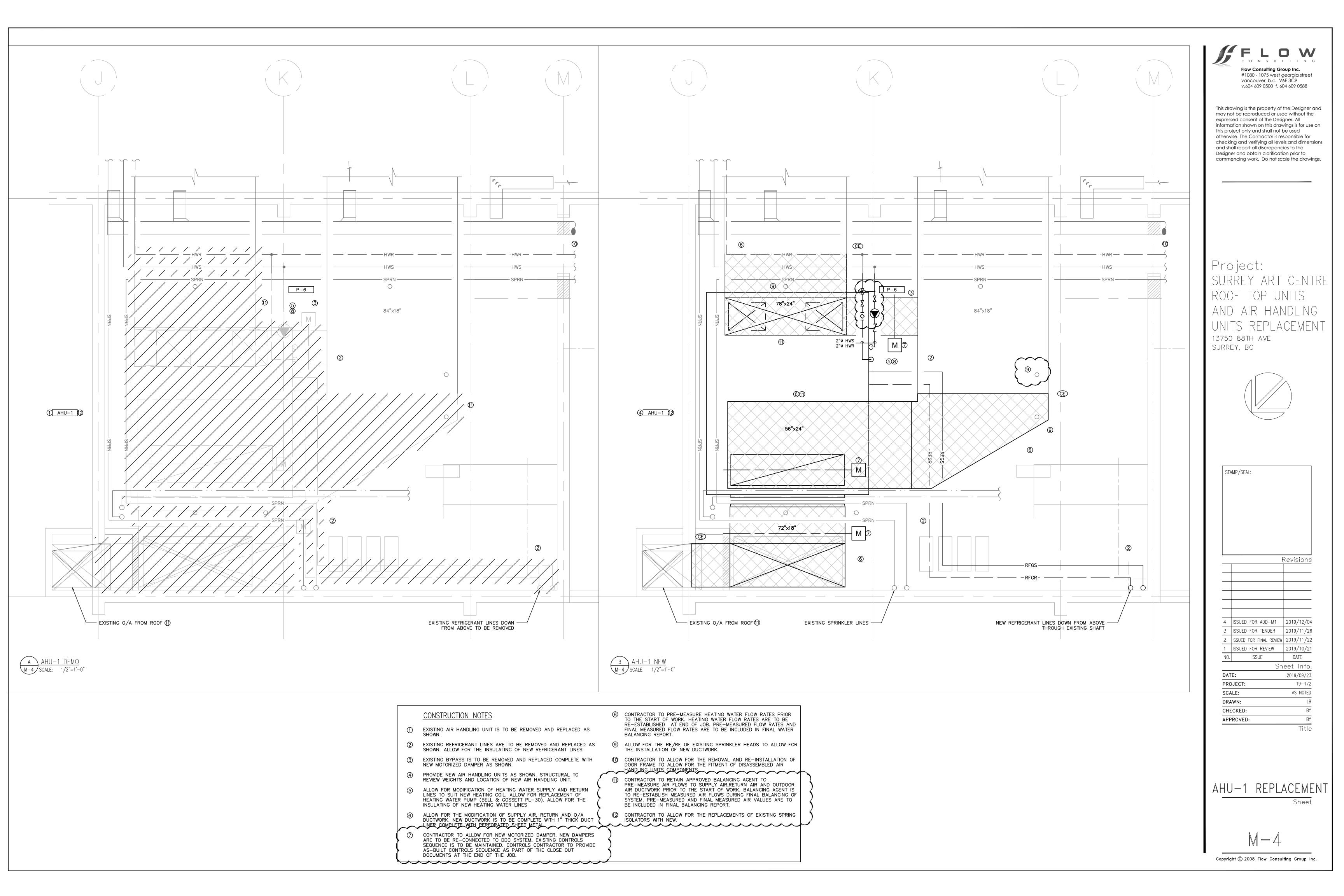
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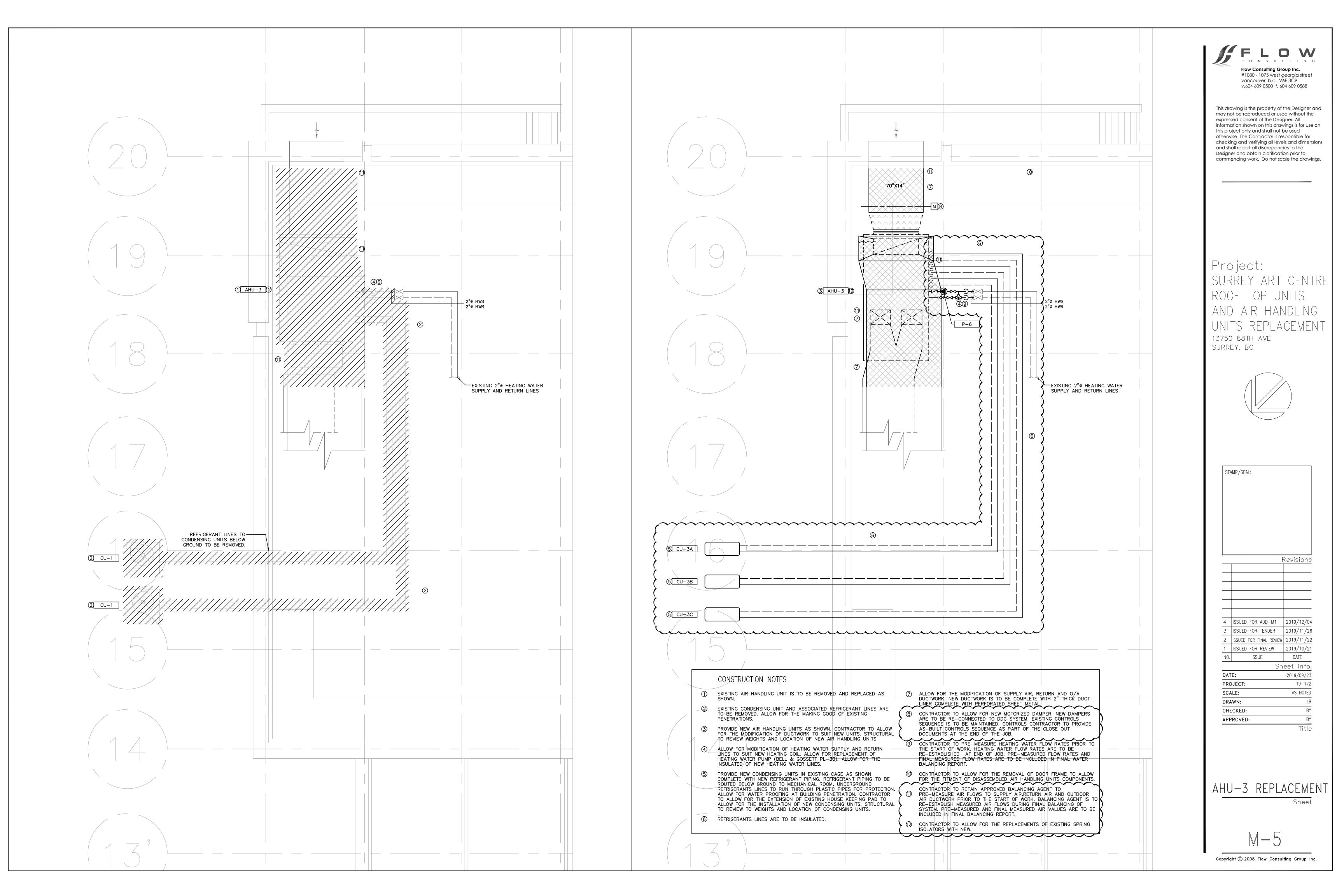
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# MECHANICAL SPECIFICATION GENERAL 1.1. INTENT 1.1.1. THE INTENT OF THIS SPECIFICATION AND THE DRAWINGS IS TO PROVIDE A COMPLETE AND FULLY OPERATIONAL MECHANICAL SYSTEM IN COMPLETE ACCORD WITH APPLICABLE CODES. THE MECHANICAL CONTRACTOR SHALL MAKE PROVISIONS FOR LABOUR MATERIAL, AND EQUIPMENT NECESSARY TO COMPLETE THE MECHANICAL WORK 1.1.2. THE WORD "PROVIDE" SHALL MEAN "SUPPLY AND INSTALL" THE PRODUCTS AND SERVICES SPECIFIED. "AS INDICATED" MEANS THAT THE ITEM(S) SPECIFIED ARE SHOWN ON THE DRAWINGS. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY TO EACH OTHER AND WHAT IS CALLED FOR IN ONE IS BINDING AS IF CALLED FOR IN BOTH. SHOULD ANY DISCREPANCY APPEAR BETWEEN DRAWINGS AND SPECIFICATIONS WHICH LEAVES DOUBT AS TO THE TRUE INTENT AND MEANING, OBTAIN A RULING FROM THE ENGINEER TEN (10) DAYS BEFORE SUBMITTING TENDER. FAILING THIS, ALLOW FOR MOST EXPENSIVE AI TFRNATIVF CONTRACT DOCUMENTS ARE DIAGRAMMATIC ONLY. THEY ARE TO ESTABLISH SCOPE, MATERIAL AND QUALITY. THEY ARE NOT DETAILED INSTALLATION DRAWINGS. MINOR DETAILS USUALLY NOT SHOWN OR SPECIFIED AND ANY INCIDENTAL ACCESSORIES REQUIRED FOR PROPER INSTALLATION OF THE SYSTEM 1.12.1. SPECIFIED ITEMS OF MECHANICAL EQUIPMENT MAY BE ARE TO BE INCLUDED IN THE WORK. CONTRACTOR IS TO ENSURE THAT ALL INTENDED EQUIPMENT WILL FIT WITHIN GIVEN SPACES. MAKE REFERENCE TO THE ELECTRICAL, MECHANICAL, ARCHITECTURAL AND STRUCTURAL DRAWINGS, WHEN SETTING OUT WORK AND BEFORE ORDERING EQUIPMENT THE CONTRACTOR SHALL VISIT THE SITE BEFORE TENDERING. EXAMINE ALL LOCAL AND EXISTING CONDITIONS ON WHICH THE WORK IS DEPENDENT. NO CONSIDERATION WILL BE GRANTED FOR ANY MISUNDERSTANDING. OF WORK TO BE DONE RESULTING FROM FAILURE TO VISIT THE SITE 1.2. CODES, REGULATIONS AND STANDARDS 1.2.1. ALL WORK SHALL CONFORM TO CURRENT EDITION OF NATIONAL, PROVINCIAL AND MUNICIPAL CODES, STANDARDS AND OTHER LEGAL REGULATIONS AND BYLAWS APPLICABLE TO THE WORK AND WILL MEET THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION 1.3. RESPONSIBILITIES TENANTS BY IMPROPER EXECUTION OF WORK. PROTECT ALL NEW AND EXISTING WORK FROM 1.3.3. TAKE RESPONSIBILITY FOR CONDITION OF MATERIALS IS COMPLETED AND ACCEPTED. COORDINATE DELIVERIES WITH THE GENERAL CONTRACTOR. COORDINATE WORK WITH ALL TRADES AND MAKE CHANGES TO FACILITATE A SATISFACTORY INTENT INVOLVING EXTRA COST TO THE OWNER, WITHOUT THE CONSULTANT'S WRITTEN APPROVAL. 1.4. CERTIFICATES 1.4.1. GIVE NOTICES, OBTAIN ALL REQUIRED PERMITS AND MAY BE CARRIED OUT. FURNISH CERTIFICATES IF REQUESTED, AS EVIDENCE THAT WORK CONFORMS WITH LAWS AND REGULATIONS OF THE AUTHORITIES HAVING JURISDICTION STANDARD OF MATERIALS AND WORKMANSHIP WORKMANSHIP SHALL BE IN ACCORDANCE WITH WELL ESTABLISHED PRACTICE AND STANDARDS ACCEPTED AND RECOGNIZED BY THE CONSULTANT AND THE 1.5.2. THE CONSULTANT SHALL HAVE THE RIGHT TO REJECT

1.13. RECORD DRAWINGS 1.13.1. MAINTAIN ONE SET OF CONTRACT DRAWING WHITE PRINTS, INCLUDING ALL SUPPLEMENTARY AND REVISION DRAWINGS ON SITE, SOLELY FOR THE PURPOSE OF RECORDING, IN RED, ANY CHANGE AND / OR DEVIATION FROM THE CONTRACT DRAWINGS AS T OCCURS. INCLUDE ELEVATIONS AND DETAILED LOCATIONS OF BURIED SERVICES. 1.12.1.1. A SET OF CAD FILES MAY BE PURCHASED FROM ASSUME RESPONSIBILITY FOR LAYOUT OF WORK; AND THE CONSULTANT. ALLOW A SINGLE PER FOR ANY DAMAGE CAUSED TO THE OWNER OR OTHER PROJECT COST OF \$450.00 FOR ALL MECHANICAL PROJECT CAD FILES. OBTAIN THE SERVICES OF AN APPROVED CAD DRAFTSPERSON TO TRANSFER ALL CHANGES TO AMEND THE CAD FILES IN THE LATEST VERSION OF AUTOCAD. THE CONSULTANT AND EQUIPMENT SUPPLIED AND PROTECT UNTIL WORK MAY BE RETAINED TO DRAFT MARKUPS INTO CAD AT A COST NOT TO EXCEED \$600.00. ALLOW FOR DRAFTSPERSON OR CONSULTANT DRAFTING COST 1.12.2. INCLUDE ALL DETAILS FROM REVISION DRAWINGS, ADDENDA, AND CHANGE ORDERS. LABEL EACH INSTALLATION. MAKE NO DEVIATIONS TO THE DESIGN DRAWING IN THE LOWER RIGHT CORNER IN LETTERS OF AT LEAST 12MM [1/2"] HIGH AS FOLLOWS: 1.12.2.1. "AS BUILT DRAWINGS", CONTRACTORS NAME AND PROVIDE ONE SET OF CHECK PRINTS FOR REVIEW BY 2.3. APPROVALS, AND PAY ALL FEES SO WORK SPECIFIED CONSULTANT. 1.12.4. UPON ACCEPTANCE BY THE CONSULTANT, PROVIDE COMPUTER CAD FILES NOTE: THE CONTRACTOR WILL BE REQUIRED TO SIGN A STANDARD FLOW CONSULTING GROUP INC. / CONTRACTOR AGREEMENT ENTITLED "AUTHORIZATION TO USE CAD DRAWING FILES". THE AGREEMENT RESTRICTS THE USE OF THE CAD FILES TO THE PURPOSE OF "AS-BUILT" ONLY AND DETERMINES THE EDITING PROCEDURES. ANY ITEM OF WORK THAT DOES NOT CONFORM TO 1.13. COORDINATION WITH ELECTRICAL DIVISION THE CONTRACT DOCUMENTS AND ACCEPTED CONTRACTOR SHALL REVIEW ALL EQUIPMENT STANDARDS OF PERFORMANCE, QUIETNESS OF REQUIRING ELECTRICAL HOOK-UP WITH ELECTRICAL OPERATION, FINISH AND APPEARANCE. CONTRACTOR AND ELECTRICAL DRAWINGS PRIOR TO EMPLOY ONLY TRADESMEN HOLDING VALID PROVINCIAL ORDERING EQUIPMENT. ENSURE PROPER ELECTRICAL CHARACTERISTICS ARE DETERMINED FOR ALL TRADE QUALIFICATION CERTIFICATES. TRADESMEN SHALL PERFORM ONLY WORK THAT THEIR CERTIFICATE AFFECTED AND RELATED WORK 1.14. SERVICE PENETRATIONS IN RATED FIRE SEPARATIONS 1.5.4. MAKE AND QUALITY OF MATERIALS USED ARE 1.14.1. ALL PIPING, TUBING, DUCTS, WIRING, CONDUITS, ETC. SUBJECT TO APPROVAL BY THE ENGINEER. REMOVE PASSING THROUGH RATED FIRE SEPARATIONS SHALL UNACCEPTABLE MATERIALS AND INSTALL SUITABLE BE SMOKE AND FIRE PROOFED WITH ULC APPROVED MATERIALS IN THEIR PLACE MATERIALS IN ACCORDANCE WITH CAN4-S115-M85 MATERIALS SHALL BE NEW AND OF UNIFORM PATTERN AND ASTM E814 STANDARDS AND WHICH MEET THE THROUGHOUT, UNLESS NOTED OTHERWISE. REQUIREMENTS OF THE BUILDING CODE IN EFFECT CORE DRILLING AND CUTTING THIS INCLUDES NEW SERVICES WHICH PASS THROUGH ALL WORK SHALL BE CO-COORDINATED WITH OTHER EXISTING RATED SEPARATIONS AND ALSO ALL TRADES ESPECIALLY THAT RELATED TO CUTTING AND EXISTING SERVICES WHICH PASS THROUGH A NEW PATCHING OF REQUIRED OPENINGS; AND LOCATIONS RATED SEPARATION OR EXISTING SEPARATIONS WHOSE AND INSTALLATION OF SLEEVES, INSERTS, SUPPORT, RATING HAS BEEN UPGRADED AND ACCESS DOORS. FIRE RESISTANCE RATING OF INSTALLED FIRESTOPPING 1.6.2. ALL OPENINGS THROUGH EXISTING CONCRETE ASSEMBLY SHALL NOT BE LESS THAN FIRE STRUCTURE SHALL BE CORE DRILLED. LAY OUT RESISTANCE RATING OF SURROUNDING ASSEMBLY REQUIREMENTS FOR REVIEW AND APPROVAL BY THE INDICATED ON ARCHITECTURAL DRAWINGS. ALL SMOKE AND FIRE STOPPING SHALL BE INSTALLED 3.1. SCOPE OWNER AND STRUCTURAL ENGINEER PRIOR TO CORING. 1.14.3. PROVIDE X-RAY OF ALL REQUIRED PENETRATIONS OF BY A QUALIFIED CONTRACTOR WHO SHALL SUBMIT A THE FLOOR AND WALLS. X-RAY USE FOR LOCATING LETTER CERTIFYING THAT ALL WORK IS COMPLETE AND IN ACCORDANCE WITH THIS SPECIFICATION. IN FLOOR REBAR AND CONDUIT TO BE DONE AFTER NORMAL WORKING HOURS. TAKE NECESSARY 1.14.4. INSTALL FIRE STOPPING AND SMOKE SEAL MATERIAL PRECAUTIONS TO PROTECT COMPUTER EQUIPMENT AND COMPONENTS IN ACCORDANCE WITH ULC WHEN X—RAYING FLOORS. CO—ORDINATE WITH OWNER. CERTIFICATION AND MANUFACTURER'S INSTRUCTIONS IN REPAIRS TO EXISTING SERVICES DAMAGED AS A FORMED, SLEEVED OR CORED PENETRATIONS. RESULT OF CORE DRILLING IS INCLUDED IN THIS 1.14.5. FIRESTOP MATERIALS SECTION OF THE WORK. 1.14.5.1. FIRESTOPPING AND SMOKE SEAL SYSTEMS: 1.7. ALTERNATIVE MATERIALS AND EQUIPMENT ASBESTOS-FREE MATERIALS AND SYSTEMS 1.7.1. CONTRACT PRICE SHALL BE BASED ON MATERIALS CAPABLE OF MAINTAINING AN EFFECTIVE BARRIER AND EQUIPMENT SPECIFIED. APPROVAL BY ENGINEER AGAINST FLAME, SMOKE AND GASES IN OF EQUIPMENT SUBMITTED BY THE MECHANICAL TRADE COMPLIANCE WITH REQUIREMENTS OF ULC AS EQUAL TO THAT SPECIFIED DOES NOT RELIEVE THE CAN4-S115-M85, OR ULI 1479 AND ASTM 814, MECHANICAL TRADE OF ANY RESPONSIBILITY. AND NOT TO EXCEED OPENING SIZES FOR WHICH MATERIAL/PRODUCTS CONSIDERED TO SATISFY THE THEY ARE INTENDED SPECIFICATION, BUT OF A MANUFACTURER OTHER FIRE RESISTANCE RATING OF INSTALLED THAN THOSE NAMED, MAY BE SUBMITTED TO THE FIRESTOPPING ASSEMBLY SHALL BE NOT LESS CONSULTANT FOR CONSIDERATION NOT LATER THAN THAN THE FIRE RESISTANCE RATING OF FIVE (5) WORKING DAYS PRIOR TO CLOSING OF SURROUNDING FLOOR AND WALL ASSEMBLY ACCEPTABLE PRODUCTS: REVISIONS REQUIRED TO ADAPT ACCEPTED EQUALS DOW CORNING, FS2000 SILICONE. 1.14.5.3.1. HILTI FIRESTOP CS2400. AND ALTERNATIVES SHALL BE INCLUDED IN THE

1.14.5.3.2.

1.14.5.3.3.

1.14.5.3.4. 3M. CP25WB.

PIPE SLEEVES

CONCENTRIC WITH PIPE

1.17. ESCUTCHEONS AND PLATES

FLOORS IN FINISHED AREAS.

TREMCO FYRE-SIL.

1.15. SERVICE PENETRATIONS IN NON-RATED SEPARATIONS

1.15.1. ALL PIPING, TUBING, DUCTS, WIRING, CONDUITS, ETC. 5.1.GENERAL

PASSING THROUGH NON-RATED FIRE SEPARATIONS

TIGHTLY FITTED AND SEALED ON BOTH SIDES OF THE

SEPARATION WITH SILICON SEALANT TO PREVENT THE

SOUND. REFER TO "PIPE SLEEVE" CLAUSE IN THIS

AND NON-RATED WALLS AND FLOORS SHALL BE

PASSAGE OF SMOKE AND/OR TRANSMISSION OF

SECTION FOR PACKING AND SEALING OF PIPE

PROVIDE PIPE SLEEVES FOR ALL PIPING PASSING

PIPE SLEEVES FOR FLOORS AND INTERIOR WALLS

PIPE SLEEVES SHALL EXTEND 6 MM [1/4"] ABOVE

SHEET STEEL WITH LOCK SEAM JOINTS.

1.17.1. PROVIDE ON PIPES PASSING THROUGH FINISHED

THROUGH WALLS AND FLOORS. SLEEVES TO BE

SHALL BE MINIMUM 0.61 [24 GA] THICK GALVANIZED

CONTRACT PRICE, NO INCREASE IN THE CONTRACT

CERTAIN ITEMS OF EQUIPMENT AND ITEMS OF WORK

(SUCH AS WATER TREATMENT, BALANCING) MAY NOT

HAVE AN APPROVED EQUAL DUE TO THE NEED TO

MAINTENANCE. REFER TO SPECIFIC CLAUSES IN THIS

COMPLY WITH THE AS TO COMPLY WITH THE CITY OF

SURREY BUILDING BY-LAW ENERGY UTILIZATION

PROVIDE THE OWNER WITH A WRITTEN GUARANTEE

PERFORMED SHALL REMAIN IN A SERVICEABLE

THAT THE EQUIPMENT INSTALLED AND THE WORK

CONDITION FOR A PERIOD OF ONE (1) YEAR FROM

THE DATE OF FINAL ACCEPTANCE BY THE OWNER.

THE WARRANTY SHALL COVER MATERIAL AS WELL AS

PRICE WILL BE CONSIDERED TO ACCOMMODATE

EQUIPMENT OTHER THAN THAT SPECIFIED.

HAVE A CONSISTENT TYPE OR SOURCE OF

1.8.1. ALL EQUIPMENT INSTALLED ON THIS PROJECT SHALL

SPECIFICATION

REQUIREMENTS.

1.10. SHOP DRAWINGS/PRODUCT DATA

1.9. GUARANTEE

1.8. COMPLIANCE WITH ENERGY BY-LAW

PLUMBING FIXTURE SHOP DRAWINGS FOR REVIEW

MATERIALS UNTIL ENGINEER HAS REVIEWED SHOP

SHOP DRAWINGS SHALL BE SPECIFIC AND REFLECT

PROVIDE FOUR (4) COPIES OF MANUALS PREPARED

ALL SPECIFIED AND SCHEDULED REQUIREMENTS.

BY THE OWNER. MANUALS FORM PART OF THE

CONTRACT AND MUST BE DELIVERED TO THE

ENGINEER BEFORE WORK WILL BE CONSIDERED

COMPLETE. EACH MANUAL SHALL PROVIDE THE

CERTIFICATION OF ALL EQUIPMENT WHERE

SYSTEMS INCLUDING OPERATING, MAINTENANCE

REQUIRED BY LOCAL CODES AND AUTHORITIES.

SHOP DRAWINGS AND MAINTENANCE BULLETINS

LIST ADDRESSES AND TELEPHONE NUMBERS OF

PERFORMANCE DETAILS FOR ALL EQUIPMENT

AVAILABLE FROM THE OWNER'S STOCK. PRIOR TO

TO ENSURE THEIR AVAILABILITY AND USABILITY FOR

ALL EQUIPMENT SUPPLIERS AND CONTRACTORS,

NCLUDING CURVES FOR FANS AND PUMPS WITH

OPERATION AND MAINTENANCE MANUALS

1.11.1.1. LAYMAN'S DESCRIPTION OF ALL MECHANICAL

AND LUBRICATION INSTRUCTIONS,

ACTUAL OPERATING POINTS NOTED.

COST OF SERVICING, MOVING IN PLACE, AND

OPERATIONAL, OR PROVISION OF NEW ONES IF

SHALL BE HANDED OVER TO THE OWNER'S

INSTALLING TO MAKE THESE ITEMS COMPLETELY

REPRESENTATIVE, OR DISPOSED OF IF DIRECTED BY

DRAWINGS.

FOLLOWING:

1 12 OWNER'S STOCK

THE OWNER.

1.10.1. SUBMIT THREE (3) SETS OF DETAILED EQUIPMENT AND WALLS, PARTITIONS, FLOORS AND CEILINGS 1.17.2. PLATES SHALL BE STAMPED STEEL, SPLIT TYPE, CHROME PLATED, OR STAINLESS STEEL, CONCEALED PRIOR TO ORDERING. DO NOT ORDER EQUIPMENT OR HINGE, COMPLETE WITH SPRINGS, SUITABLE FOR EXTERNAL DIMENSIONS OF PIPING/INSULATION. SECURE 5.3.1.1. TO PIPE OR FINISHED SURFACE. FOR ALL PIPES PASSING THROUGH SUSPENDED CEILINGS AND UNINSULATED PIPING PASSING THROUGH WALLS. OUTSIDE DIAMETER SHALL COVER OPENING OR SLEEVE BY QUALIFIED AND EXPERIENCED PERSONNEL FOR USE 1.17.3. WHERE PIPE SLEEVE EXTENDS ABOVE FINISHED FLOOR, ESCUTCHEONS OR PLATES SHALL CLEAR SLEEVE EXTENSION. DO NOT INSTALL ESCUTCHEONS AND PLATES IN CONCEALED LOCATIONS. 2. TESTING BALANCING & COMMISSIONING 2.1. BALANCING 2.1.1. CONTRACTOR IS TO PROVIDE THE SERVICES OF AN APPROVED PROFESSIONAL TESTING & BALANCING PROVIDE A BALANCE REPORT OF ALL AIR & WATER BALANCE POINTS AND PERFORMANCE TESTING & BALANCING OF ALL EQUIPMENT AS PER THE AABC. PROVIDE ALL REQUIRED SHEAVE, BELT AND IMPELLER CHANGES TO ACHIEVE THE REQUIRED FAN AND PUMP FLOW RATES MEASURE AND BALANCE THE FOLLOWING (WHERE APPLICABLE): SUPPLY, EXHAUST AND RETURN FAN VOLUMES AIRFLOW AT EACH AIR OUTLET AND BRANCH SUBMITTING THE TENDER PRICE, REVIEW THESE ITEMS MOTOR AMPERAGE DRAW ON ALL MOTORS AND THE PROJECT. THE TENDER PRICE SHALL INCLUDE THE 2.1.4.3. COMPARE WITH MOTOR RATING. WATER AT EACH BALANCE VALVE AND TERMINAL HEATING MANIFOLD BALANCE DOMESTIC WATER RE-CIRCULATION. 1.12.2. WHERE EQUIPMENT IS REMOVED AND NOT RE-USED IT 2.1.5. ADDITIONAL TESTING OF THE SYSTEM MAY BE REQUESTED BY THE CONSULTANT TO SPOT CHECK AIR AND WATER FLOW QUANTITIES. (10% OF THE SYSTEM WILL BE RE-CHECKED AT THE DISCRETION OF THE CONSULTANT) AT THE CONTRACTORS COST SUBMIT TWO (2) COPIES OF THE BALANCING REPORT TO THE ENGINEER WITHIN TWO (2) WEEKS AFTER SUBSTANTIAL COMPLETION. FAILURE TO SUBMIT THE REPORT WITHIN THE SPECIFIED TIME WILL RESULT IN THE WORK BEING DONE BY THE OWNER AND THE COSTS DEDUCTED FROM THE FINAL PAYMENT. BALANCING SHALL BE PERFORMED TO THE FOLLOWING ACCURACIES: 2.1.7.1. AIR TERMINAL OUTLETS +/- 10% 2.1.7.2. AIR CENTRAL EQUIPMENT +/-5%2.1.7.3. HYDRONIC TERMINALS +/- 10% COOPERATE WITH THE BALANCING AGENCY AS FOLLOWS: 2.2.1. MAKE CORRECTIONS AS REQUIRED BY THE BALANCING 6.5. PIPE FITTINGS, SCREWED, FLANGED OR WELDED: ALLOW BALANCING AGENCY FREE ACCESS TO SITE DURING CONSTRUCTION PHASE. INFORM BALANCING AGENCY OF ANY MAJOR CHANGES MADE TO SYSTEMS DURING CONSTRUCTION AND PROVIDE A COMPLETE SET OF RECORD DRAWINGS FOR THEIR USE. OPERATE AUTOMATIC CONTROL SYSTEM AND VERIFY ETPOINTS DURING BALANCING. PROVIDE BALANCING AGENCY A COMPLETE SET OF MECHANICAL DRAWINGS AND SPECIFICATIONS. BALANCING VALVES AND DAMPERS 2.3.1. PROVIDE AND INSTALL BALANCING VALVES, DAMPERS AND OTHER MATERIALS REQUESTED FROM THE BALANCING AGENCY AND/OR NECESSARY TO PROPERLY ADJUST OR CORRECT THE SYSTEMS TO DESIGN FLOWS, WITHOUT ADDITIONAL COST TO THE COMMISSIONING AND DEMONSTRATION 2.4.1. BE RESPONSIBLE FOR THE PERFORMANCE AND COMMISSIONING OF ALL EQUIPMENT SUPPLIED AND RE-USED UNDER THE HVAC SECTIONS OF DIVISION 15. 2.4.2. AT THE CONCLUSION OF COMMISSIONING DEMONSTRATE THE OPERATION OF THE SYSTEMS TO THE CONSULTANT AND THEN TO THE OWNER'S OPERATING STAFF. AT THE COMPLETION OF THE COMMISSIONING, TESTING, 6.9. GLOBE VALVES BALANCING AND DEMONSTRATION SUBMIT TO THE CONSULTANT A LETTER CERTIFYING THAT ALL WORK SPECIFIED UNDER THIS CONTRACT IS COMPLETE CLEAN AND OPERATIONAL IN ACCORDANCE WITH THE SPECIFICATION AND DRAWINGS. DEFICIENCY HOLDBACKS AND DEFICIENCY INSPECTIONS WORK UNDER THIS DIVISION WHICH IS STILL OUTSTANDING WHEN SUBSTANTIAL PERFORMANCE IS COMPLETING THAT WORK WILL BE HELD BACK. IT IS EXPECTED THAT OUTSTANDING WORK WILL BE COMPLETED IN AN EXPEDITIOUS MANNER AND THE REQUIREMENTS FOR TOTAL PERFORMANCE OF DIVISION 6.10. 15 WORK HAVE BEEN MET AND VERIFIED. SEISMIC RESTRAINTS 3.1.1. PROVIDE SEISMIC RESTRAINTS ON PIPING, DUCTS AND EQUIPMENT. RESTRAINTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION IF THE SEISMIC RESTRAINT MANUAL MECHANICAL SYSTEMS PRODUCED BY SMACNA (SEISMIC HAZARD LEVEL B) AND THE ASHRAE HANDBOOK APPLICATIONS CHAPTER 49 SEISMIC RESTRAINT DESIGN 3.2. EQUIPMENT - SEISMIC RESTRAIN PROVIDE SEISMIC RESTRANTS IN ACCORDANCE WITH DETAILS IN SMACNA GUIDELINES OR ALTERNATIVELY SLACK CABLES MAY BE USED. ORIENT RESTRAINT CABLES AT APPROXIMATELY 90° TO EACH OTHER (IN PLAN), AND TIE BACK TO THE CEILING SLAB AT AN ANGLE NOT EXCEEDING 45° TO THE SLAB. VIBRATION ISOLATION GENERAL PROVIDE VIBRATION ISOLATION ON ALL MOTOR DRIVEN EQUIPMENT WITH MOTORS OF ½ HP

AND GREATER

EXCEED 50.

5.2.1.1.

THE SUPPORT POINTS.

5.THERMAL AND ACOUSTIC INSULATION

5.2. PREFORMED PIPE COVERING

ON PIPING AND DUCTWORK, AS SPECIFIED HEREIN. FOR

EQUIPMENT LESS THAN 1/2 HP, PROVIDE NEOPRENE GROMMETS AT 167

STANDARDS MANUAL" AS A REFERENCE STANDARD IF

SUFFICIENT DETAIL/INFORMATION IS NOT SPECIFIED

FLAME SPREAD RATINGS AND SMOKE DEVELOPED

GLASS FIBRE PREFORMED PIPE INSULATION

(TESTED ASTM C-411-61) COMPLETE WITH

INTEGRAL REINFORCED VINYL FOIL LAMINATED

VAPOUR BARRIER JACKET (THERMAL CONDUCTIVITY

CLASSIFICATIONS SHALL BE AS REQUIRED BY

THE 2015 NATIONAL BUILDING CODE. GENERALLY THE FLAME

25 AND THE SMOKE DEVELOPED CLASSIFICATION SHALL NOT

GLASS FIBRE PREFORMED PIPE INSULATION:

AT 240C - 0.040 W/M/DEG.C.

5.1.1. AS APPLICABLE, USE THE LATEST EDITION OF THE

ACCESSORIES FIRESTOP MATERIALS FIRESTOPPING AND SMOKE SEAL SYSTEMS: ASBESTOS-FREE MATERIALS AND SYSTEMS CAPABLE OF MAINTAINING AN EFFECTIVE BARRIER AGAINST FLAME, SMOKE AND GASES IN 7.2. GALVANIZED STEEL COMPLIANCE WITH REQUIREMENTS OF ULC 7.2.1. GALVANIZED STEEL SHALL HAVE A 380 G/SQ.M. CAN-S115-M85, OR ULI 1479 AND ASTM 814, [1-1/4 OZ/SQ.FT] GALVANIZING COAT BOTH SIDES TO ASTM AND NOT TO EXCEED OPENING SIZES FOR WHICH A525 G90. THEY ARE INTENDED 7.3. DUCTWORK — ALUMINUM FIRE RESISTANCE RATING OF INSTALLED 7.3.1. THE FOLLOWING DUCTWORK SHALL BE FABRICATED FIRESTOPPING ASSEMBLY SHALL BE NOT LESS THAN THE FIRE RESISTANCE RATING OF SURROUNDING FLOOR AND WALL ASSEMBLY. ACCEPTABLE PRODUCTS: DOW CORNING FS2000 7.3.2.LOW PRESSURE ALUMINUM DUCTWORK SHALL BE SILICONE, HILTI FIRESTOP CS2400, TREMCO CONSTRUCTED IN ACCORDANCE WITH CLAUSE 2.2 "DUCTWORK -FYRE-SIL, 3M CP25WB. 500 PA [2"] STATIC PRESSURE". ADHESIVES: 7.3.3. FOR ROUND AND RECTANGULAR ALUMINUM DUCTWORK FLEXIBLE ELASTOMERIC AND FLEXIBLE CLOSED CELL INSULATION ADHESIVE: ARMSTRONG 520, THERMA-CEL 1590, RUBATEXR-373, ZIPCOAT 8A. COATINGS FLEXIBLE ELASTOMERIC AND FLEXIBLE CLOSED CELL INSULATION FINISH COATING: ARMSTRONG, BAKELITE 120-13, RUBATEX, ZIPCOAT. 5.4. SCOPE OF PIPING INSULATION 5.4.1. HEATING WATER PIPING, DOMESTIC HOT AND COLD WATER PIPING, FITTINGS AND VALVES: INSULATE AND VAPOUR SEAL THE FOLLOWING 7.4. DUCTWORK PRESSURES FITTINGS: 7.4.1. PROVIDE DUCTWORK FABRICATED FROM GALVANIZED ELBOWS, TEES, REDUCERS VALVES, (BODIES AND BONNETS) EXCEPT CHECK VALVE COVERS. 7.4.1.1. 500 PA [2" W.G.] STATIC PRESSURE: ALL SUPPLY STRAINERS 5.4.1.1.4. FLANGES. 5.4.1.1.5. UNIONS. 7.4.1.2. 6.1. STEEL PIPE: TO ASTM A53 GRADE B AS FOLLOWS: TO NPS 10, SCHEDULE 40. 6.1.2. FOR THE FOLLOWING SYSTEMS: HOT WATER HEATING 7.4.2. DUCTWORK SHALL BE CONSTRUCTED, REINFORCED, RELIEF VALVE VENTS 6.2. COPPER PIPE: TO ASTM B88M-86, TYPE K, OR L HARD DRAWN COPPER TUBING. TYPE L, HARD DRAWN: DOMESTIC HOT AND COLD 7.5. DUCTWORK CLEANING 7.5.1. 6.2.1.2. PRESSURE DRAINS (TO NPS 2). 6.3. PIPE JOINTS - STEEL PIPING 6.4. NPS 2 AND UNDER: SCREWED FITTINGS, EXCEPT WHERE OTHERWISE NOTED, WITH TEFLON TAPE OR PULVERIZED 7.5.2. ALL DUCTWORK SHALL BE WIPED CLEAN OF ALL OIL LEAD PASTE CAST IRON SCREWED FITTINGS: CLASS 125 TO ANSI 7.5.3. 6.5.2. UNIONS, MALLEABLE IRON GROUND JOINT TYPE CLASS 150 TO ANSI B16.3. 6.6. GATE VALVES - NPS 2 AND UNDER, SCREWED: BRONZE BODY, RISING STEM, SOLID WEDGE DISC, UNION OR SCREWED BONNET 7.5.5. WHERE CONNECTING TO EXISTING DUCTWORK, CLEAN ACCEPTABLE PRODUCTS: CLASS 125 [860 KPA] -CRANE 428, GRINNELL 3010, JENKINS 810, KITZ 24, NEWMAN HATTERSLEY 607, NIBCO T-111, TOYO 293. 6.7. GATE VALVES - NPS 2 AND UNDER, SOLDERED: BRONZE BODY, RISING STEM, SOLID WEDGE DISC, SCREWED BONNET. ACCEPTABLE PRODUCTS: CLASS 200 W.O.G. [1380 KPA] – CRANE 1334, GRINNELL 3080SJ, JENKINS 813, KITZ 44, NEWMAN HATTERSLEY 607C, NIBCO S-134, TOYO 299. 6.8. BALANCE FITTINGS (SCREWED CONNECTIONS) - NPS 11/4 AND 8. DUCT ACCESSORIES 8.1. BALANCING DAMPERS UNDER: 8.1.1. CONSTRUCTION IN ACCORDANCE WITH SMACNA DUCT BRONZE BODY AND BRONZE TRIM, RISING STEM, 6.8.1. RENEWABLE COMPOSITION DISC. GLOBE TYPE WITH MEMORY STOP, LOCKSHIELD, MALE UNION CONNECTION, 8.1.2. ANGLE AND STRAIGHT TYPE 6.8.2. ACCEPTABLE PRODUCTS: CLASS 100 [690 KPA] -DAHL 13000-M SERIES, TOYO 250 OR 251. 8.2. DUCT CONNECTORS - VIBRATION ISOLATION 8.2.1.PROVIDE FLEXIBLE DUCT CONNECTIONS TO PROVIDE 6.9.1. NPS 2 AND UNDER, SCREWED: BRONZE BODY, RISING STEM, SOLID WEDGE DISC, VIBRATION ISOLATION AT ALL DUCT AND PLENUM CONNECTIONS TO FAN AND AIR HANDLING SEE FIGURE 2-19 SMACNA DUCT UNION OR SCREWED BONNET ACCEPTABLE PRODUCTS: CLASS 125 [860 KPA] -STANDARDS. CRANE 428, GRINNELL 3010, JENKINS 810, KITZ 8.2.2.MINIMUM REQUIREMENTS: 8.2.2.1.PRE-ASSEMBLED 75 MM [3"] MINIMUM LONG FLEXIBLE 24, NEWMAN HATTERSLEY 607, NIBCO T-111, CONNECTION WITH 75 MM [3"] LONG 0.62 MM [24 GA] 6.9.2. NPS 2 AND UNDER, SOLDERED: ENTIRE HOLDBACK SUM WILL BE RETAINED UNTIL THE NEWMAN HATTERSLEY 607C, NIBCO S-134, TOYO 299. HANGER SPACING AS SPECIFIED IN PARAGRAPHS BELOW OR AS IN TABLE BELOW. WHICHEVER IS MORE STRINGENT. AUTHORITY HAVING JURISDICTION. FIRE PROTECTION: TO APPLICABLE FIRE CODE; TOGGLE HANGERS ARE UNACCEPTABLE. FOR GAS PIPING REFER TO GAS CODE CAN /CGA-B149.1 FLEXIBLE JOINT ROLL GROOVE PIPE: IN THAN ONE HANGER AT JOINTS. WITHIN 300 MM [12"] OF EACH HORIZONTAL 6.10.2. MAXIMUM HANGER SPACING TABLE. ROD DIAMETER MAXIMUM SPACING MAXIMUM SPACING STEEL PIPE 10 [3/8] 1.8 [6] POWER OUTPUT (AS INDICATED ON THE MOTOR NAMEPLATE) AND 167

5.2.2. ACCEPTABLE PRODUCTS: KNAUF, ASI, FIBREGLAS ASI,

MANVILLE MICRO-LOK AP.

ELEVATION AND DUCT SHAPE TO ELIMINATE

INTERFERENCE WITH STRUCTURE AND OTHER SERVICES.

WORK PRIOR TO FABRICATION AND MUST BE PROVIDED

EXHAUST DUCT WORK FROMSHOWERS/BATHS, TO

USE FOUR GAUGES HEAVIER THAN THAT SCHEDULED

IN TABLE 1-5 OR TABLES 1-14, 1-15, 1-16 OF THE

ALUMINUM FLAT BAR OR ALUMINUM ANGLE HANGERS.

SUPPORT SHALL BE SIMILAR TO THAT SPECIFIED FOR

STEEL FOR THE STATIC PRESSURE CATEGORIES LISTED

DUCTWORK DOWNSTREAM FROM MIXING BOXES/AIR

VALVES TO TERMINAL AIR OUTLETS; ALL RETURN

750 PA [3" W.G.] STATIC PRESSURE: ALL SUPPLY

DUCTWORK DOWNSTREAM FROM SMOKE DAMPERS

(LEAVING DUCT SHAFTS OR LEAVING MECHANICAL

ROOM WALL) UP TO THE UPSTREAM CONNECTIONS

SEALED AND INSTALLED TO WITHSTAND 1½ TIMES THE

ENSURE THAT ALL DUCTWORK, INSTALLED UNDER THIS

CONTRACT IS INTERNALLY CLEAN WHEN HANDED OVER

AND OTHER SURFACE FILMS WITH SUITABLE SOLVENT

7.5.3. SEAL ALL OPENINGS AT THE END OF EACH

OTHER OPENINGS TO BE COVERED WITH 0.15 MM [6

SPOT CHECKS WILL BE MADE BY THE CONSULTANT

BE MADE TO VERIFY THAT THE DUCTS ARE

STANDARDS — FIGS. 2—14 AND 2—15

GENERALLY IF ANY DUCTS ARE FOUND TO BE

UNCLEAN, THEN THEY SHALL BE RECLEANED.

PROVIDE BALANCING DAMPERS AT POINTS ON LOW

AS REQUIRED FOR PROPER AIR BALANCING.

PRESSURE SUPPLY, RETURN AND EXHAUST SYSTEMS

WHERE BRANCHES ARE TAKEN FROM LARGER DUCT

REQUIRED STANDARD IS BEING WHEN SUBSTANTIAL

MILS] THICK POLY SHEET TAPED SO AS TO BE AIR

RE-USED DUCTWORK UPSTREAM FOR MINIMUM 900 MM

DURING THE CLEANING PROCESS TO VERIFY THAT THE

PERFORMANCE IS CLAIMED, FINAL SPOT CHECKS WILL

DAY AND AT SUCH OTHER TIME AS SITE CONDITIONS

THIS CONTRACTOR SHALL BE RESPONSIBLE FOR AND

THE EXTENT NOTED ON THE DRAWINGS.

SMACNA DUCT STANDARDS FOR GALVANIZED

STRAPS, CADMIUM PLATED THREADED RODS,

SUPPORT ALUMINUM DUCTWORK USING ALUMINUM

ALUMINUM SHALL BE UTILITY GRADE.

TO MIXING BOXES/AIR VALVES.

GALVANIZED IRON DUCTWORK.

AIR DUCTWORK

WORKING STATIC PRESSURE.

PRIOR TO INSTALLATION.

AS PART OF THE CONTRACT AND ALL ASSOCIATED

ALL REQUIRED ADJUSTMENTS SHALL BE ESTABLISHED

WHEN COORDINATING AND FIELD MEASURING THE

COSTS MUST BE CONSIDERED AND INCLUDED.

FROM ALUMINUM:

DUCTWORK.

GALVANIZED STEEL DUCT CONNECTORS ON EACH SIDE OF THE CERTIFIED WILL BE CONSIDERED DEFICIENT AND A SUM 6.9.2. NPS Z AND UNDER, SOLDERED.

CERTIFIED WILL BE CONSIDERED DEFICIENT AND A SUM 6.9.2.1.BRONZE BODY, RISING STEM, SOLID WEDGE DISC, SCREWED FLEXIBLE CONNECTION. FLEXIBLE CONNECTOR — FIBER GLASS FABRIC WITH ELASTOMER COATING. 6.9.2.2. ACCEPTABLE PRODUCTS: CLASS 200 W.O.G. [1380 8.2.3 STANDARD OF ACCEPTANCE: DURO DYNE "DUROLON", KPA] - CRANE 1334, GRINNELL 3080SJ, JENKINS 813, KITZ 44, DYNAIR "HYPALON", VENTFABRICS "VENTLON". 9.AIR DISTRIBUTION EQUIPMENT 6.10.1. SPACING AND MIDDLE ATTACHMENT (ROD) DIAMETER 9.1.FANS - GENERAL 9.1.1.SUBMIT FAN SOUND POWER LEVELS WITH SHOP DRAWINGS, MEASURED TO AMCA300 AND CALCULATED TO AMCA301, OR 6.10.1.1. PLUMBING PIPING: MOST STRINGENT REQUIREMENTSOTHER DATA ACCEPTABLE TO THE CONSULTANT. PROVIDE TEST OF BC PLUMBING CODE, PROVINCIAL CODE, OR DATA IF REQUESTED. FANS EXCEEDING DESIGN LEVELS MAY BE 9.1.1. DESIGN IS BASED ON FAN SOUND POWER LEVELS, DISCHARGE ONLY, PREDICTED BY THE ASHRAE GUIDE,1987 SYSTEMS, PAGE 52.8. 9.1.2. STATICALLY AND DYNAMICALLY BALANCED, CONSTRUCTED IN CONFORMITY WITH AMCA99-83. ACCORDANCE WITH TABLE BELOW, BUT NOT LESS 9.1.4.DYNAMICALLY BALANCE FANS TO 1.5MM/S VIBRATION AMPLITUDE, MAXIMUM MEASURED ON BEARING HOUSINGS. PROVIDE FAN SHAFTS WITH CRITICAL SPEED AT LEAST 1.5 TIMES OPERATIONAL SPEED. 9.1.5. RATINGS: BASED ON TESTS PERFORMED IN ACCORDANCE WITH AMCA 210-74, AND ASHRAE 51-85. UNITS SHALL BEAR AMCA CERTIFIED RATINGSFAL COPPER PIPE NPS MM [IN] 9.1.6. REFER TO DRAWINGS FOR MOTOR POSITION, ROTATION AND DISCHARGE ARRANGEMENTS. 1.5 10. CONTROLS 10.1. RELATED WORK 2.4 [8] 10 [3/8] 1.8 11.1.1.THIS SECTION OF THE SPECIFICATION FORMS PART OF THE CONTRACT DOCUMENTS AND IS TO BE READ, INTERPRETED AND 3.0 [10] 1.8 COORDINATED WITH ALL OTHER PARTS. 10 [3/8] 10.2. GENERAL 10.2.1. RELOCATE EXISTING CONTROL DEVICES AS INDICATED. 10 [3/8] 3.0 [10] 11.2.2. WHERE EXISTING DEVICES ARE REUSED, VERIFY 3.0 OPERATION AND RE-CALIBRATE AS REQUIRED. 12 [1/2] 3.0 [10] 10.2.3. VERIFY CORRECT OPERATION OF CONTROLLED DEVICES INCLUDING PUMPS, CONTROL VALVES, ETC. WITHIN THE "BC INSULATION CONTRACTORS ASSOCIATION (BCICA) 5, 6, 8 SCOPE OF THE PROJECT. 3.0 [10] 10.2.4. REPORT ANY EXISTING CONTROL DEVICE WHICH NEED REPLACEMENT. REPLACEMENT WILL BE BY BUILDING MANAGER OR VIA CHANGE ORDER, AT THE DISCRETION 7.1. GENERAL OF THE OWNER, REPORT OF DEFICIENCIES SHOULD BE 7.1.1.THE CONSTRUCTION AND INSTALLATION OF DUCTWORK SHALL SUBMITTED PRIOR TO FINAL COMMISSIONING SO AS TO BE IN ACCORDANCE WITH THE FOLLOWING REFERENCED SMACNA NOT DELAY THE SCHEDULED COMPLETION DATE. SPREAD RATING THROUGHOUT THE MATERIAL SHALL NOT EXCEED MANUALS AND ASHRAE HANDBOOKS. 10.2.5. EXISTING AND NEW CONTROLS SYSTEMS SHALL BE SMACNA - HVAC DUCT CONSTRUCTION UTILIZED TO ACHIEVE SPECIFIED PERFORMANCE. STANDARDS, 2005. 10.2.6. THE CONTRACTOR SHALL REVIEW ALL CONTRACT 7.1.1.2 SMACNA - HVAC AIR DUCT LEAKAGE TEST MANUAL. DOCUMENTS AND VISIT THE SITE PRIOR TO TENDER CLOSING TO CONFIRM ALL NECESSARY ITEMS HAVE ASHRAE - HANDBOOK - EQUIPMENT VOLUME. BEEN INCLUDED THE PROJECT DRAWINGS ARE DIAGRAMMATIC AND 11.2.7. ALL THERMOSTATS TO BE PROGRAMMABLE TYPE WITH ALTHOUGH EFFORTS HAVE BEEN MADE TO PROVIDE DISPLAY AND READ IN CELSIUS INFORMATION REGARDING THE NUMBER OF OFFSETS

AND TRANSITIONS, NOT ALL ARE NECESSARILY SHOWN. END OF SECTION

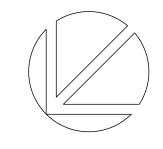
CHANGES MAY BE REQUIRED IN DUCT ROUTINGS,

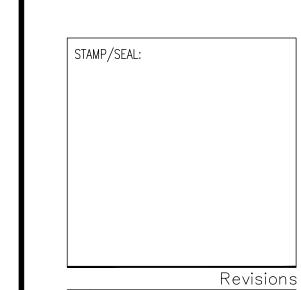


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UNITS REPLACEMENT 13750 88TH AVE SURREY, BC





4 | ISSUED FOR ADD-M1 | 2019/12/04 3 ISSUED FOR TENDER 2019/11/26 2 ISSUED FOR FINAL REVIEW 2019/11/22 1 ISSUED FOR REVIEW 2019/10/2 ISSUE DATE Sheet Info. DATE: 2019/09/23 19-172 PROJECT: SCALE: N.T.S CHECKED: APPROVED: Title

MECHANICAL

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# **ADDENDUM NO. E1**

TO: City of Surrey PAGE: 1 of 1

DATE: December 05, 2019

PROJECT NO.: 19-172
Surrey BC CONTRACT: Electrical

DISTRIBUTION:

ATTN: Farhad Alizadeh Prime Consultant (x)

PROJECT: Surrey Art Centre Mech. Contractor (X)

13750 88 Avenue Elect. Contractor (X)

Surrey, BC, V3W 3L1 Resident Eng. ( ) File (x)

Other ()

ISSUED BY Andrew Sinclair

#### TO ALL BIDDERS OF RECORD

#### 1. GENERAL

- 1.1 This addendum is issued pre "RFP" Proposal closing to provide for certain revisions as noted herein.
- 1.2 All such revisions will become part of the Work and the effects shall be included in the Proposal price.
- 1.3 All work shall be performed in accordance with the Contract Documents.

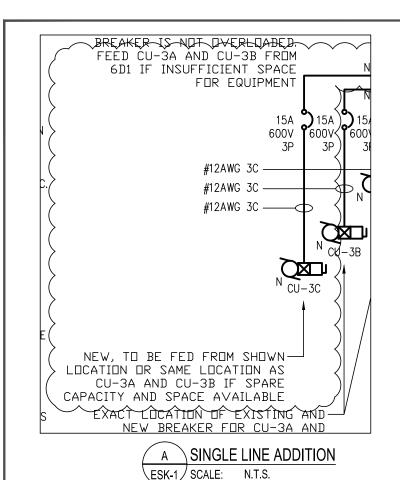
#### 2. MOTOR LIST CHANGES

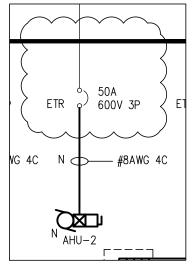
- 2.1 AHU-2 MCA has changed from 38.4 to 44.8. MOP has been upsized from 45A 3P to 50A 3P. All wiring to be sufficient for 50A rated for 75° C.
- 2.2 Additional unit added, CU-3C. 10.6 MCA with 15A 3P breaker fed with 3#AWG12. See attached drawing.
- 2.3 All breakers on mechanical equipment schedule corrected to 15A 3P for equipment CU-3A and CU-3B.

## 3. GENERAL CHANGES

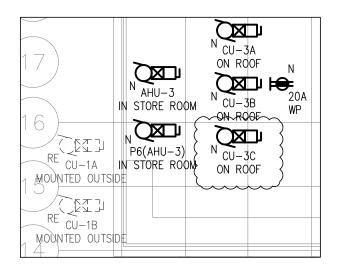
3.1 Additional requirement add onto E2: under general notes new note 9, "E.C. to provide power and distribution for motorized dampers. Coordinate with mechanical for exact number and locations."

-END-





B SINGLE LINE ALTERATION
ESK-1 SCALE: N.T.S.



C UNIT CU-3C LOCATION
(ESK-1) SCALE: 1/16"=1'-0"

9. E.C. TO PROVIDE POWER AND DISTRIBUTION FOR MOTORIZED DAMPERS. COORDINATE WITH MECHANICAL FOR EXACT NUMBER AND LOCATIONS.

D DRAWING E2 GENERAL NOTES
ESK-1 SCALE: N.T.S.

_											
	/	AHU-2~~	AIR-HANDLING-UNIT	-44.8-MCA	6004~~	13h~~	~6D1~~~	~50A,5P~~~	~\$#AWG8~~~	~8EE~HOTES~~_	
	(	AHU-3	AIR HANDLING UNIT	31 MCA	600V	3ø	MCC M	50A,3P	3#AWG8	SEE NOTES	)
		CH-4~~	CONDENSING UNIT	~15 MCA~	6007	3000	~ <del>6D1</del> ~~~~	~20A,3P~~	~3#AWG12~~	~SEE_NOTES~	
		CU-3A	CONDENSING UNIT	10.6 MCA	) 600V	3ø	MCC M	{ 15A,3P }	3#AWG12	SEE NOTES	
		CU-3B	CONDENSING UNIT	(10.6 MCA	600V	3ø	MCC M	15A,3P	3#AWG12	SEE NOTES	
	(	CU-3C	CONDENSING UNIT	10.6 MCA	600V	3ø	MCC M	15A,3P	3#AWG12	SEE NOTES	)
	`	P-6(AHU1)	AHU-1 HEATING WATER PUMP	1/12 HP	120V	10	PANEL G	15A,1P	2#AWG12	SEE NOTES	

	$\Lambda$	19/12/04	ISSUED FOR ADDENDUM E1	AJS	OAB
no.	rev.	y/m/d	issued for	by	app.



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	designed		scale		y/m/d
NEW MECHANICAL UNIT CU-3C		AJS	AS	SHOWN	19/12
UNII CU-3C	drawn		project	no.	contract
		AJS		19-172	
project	checked		drawin	a no.	rev.
SURREY ARTS CENTRE ROOF TOP UNIT		OAB		,	
AND AIR HANDLING UNIT REPLACEMENT	approved		l es	K-1	
		OAB			