SYMBOL & ABBRE	EVIATIONS	6			
SYMBOL	ABBREVIATION	DESCRIPTION	SYMBOL	ABBREVIATION	DESCRIPTION
-	ACCU-	AIR COOLED CONDENSING UNIT	Ś	-	SMOKE DETECTOR
_	AD	ACCESS DOOR	◄∿-	-	AIR INTO REGISTER
-	AFF	ABOVE FINISHED FLOOR	•	-	POINT OF CONNECTION DISCONNECTION
_	AHC	ABOVE HUNG CEILING		TR	TOP REGISTER SUPPLY
_	AP	ACCESS PANEL	-V-+	TR	TOP REGISTER RETURN
	ВНР	BRAKE HORSEPOWER		SR	SUPPLY REGISTER
	BTU	BRITISH THERMAL UNIT		RR/RG	RETURN REGISTER/GRILLE
	CFM			_	SUPPLY DUCT UP
	DB				SUPPLY DUCT DOWN
				_	RETURN DUCT UP
				_	RETURN DUCT DOWN
	DUAS				TRANSITION FROM SQUARE TO ROUND
-					
-					
-					
-	EF-				
-	EL	ELEVATION		_	SQUARE VANED ELBOW
-	ER	EXHAUST REGISTER		_	
-	ERV	ENERGY RECOVERY VENTILATOR		_	
-	ESP	EXTERNAL STATIC PRESSURE	<u> </u>	AL	ACOUSTIC LINING
-	FPM	FEET PER MINUTE		FD/AD	FIRE DAMPER W/ ACCESS DOOR
-	FPS	FEET PER SECOND		VD	VOLUME DAMPER
-	HP	HORSE POWER		AL	ACOUSTIC LINING
-	HV-	HEATING AND VENTILATING UNIT	<u> 6x8 </u>	-	DUCT SIZE - 1ST FIGURE IS SIDE SHOWN
-	LAT	LEAVING AIR TEMPERATURE		FC	FLEXIBLE CONNECTION
-	LF	LINEAR FEET	AHU X	-	EQUIPMENT TAG
-	МВН	1000 BRITISH THERMAL UNITS PER HOUR	AXXX	-	AIR OUTLET CFM TAG
-	OAI	OUTSIDE AIR INTAKE	SED NOTES		
-	PSI	POUNDS PER SQUARE INCH	1. THE OCCUPIED PORTIO	N OF ANY SCHO	OL BUILDING SHALL ALWAYS COMPLY WITH THE
-	RA	RETURN AIR	MINIMUM REQUIREMENT	S NECESSARY TO	D MAINTAIN A CERTIFICATE OF OCCUPANCY.
<u> </u>	RPM	REVOLUTIONS PER MINUTE	2. GENERAL SAFETY AND S 2.1. ALL CONSTRUCTION	SECURITY STAND	ARDS FOR CONSTRUCTION PROJECTS: LL BE STORED IN A SAFE AND SECURE MANNER.
-	RTU-	ROOFTOP UNIT	2.2. FENCES AROUND CO 2.3. GATES SHALL ALWA	ONSTRUCTION SU YS BE LOCKED U	JPPLIES OR DEBRIS SHALL BE MAINTAINED. NLESS A WORKER IS IN ATTENDANCE TO
-	SA	SUPPLY AIR	PREVENT UNAUTHO 2.4. DURING EXTERIOR F	RIZED ENTRY. RENOVATION WO	RK, OVERHEAD PROTECTION SHALL BE PROVIDED
-	SP	STATIC PRESSURE	FOR ANY SIDEWALK AREAS SHALL BE FE	S OR AREAS IMM NCED OFF AND P	EDIATELY BENEATH THE WORK SITE OR SUCH ROVIDED WITH WARNING SIGNS TO PREVENT
-	TD	TRANSFER DUCT	ENTRY. 2.5. WORKERS SHALL BI	E REQUIRED TO V	EAR PHOTO-IDENTIFICATION BADGES AT ALL
-	TSP	TOTAL STATIC PRESSURE	TIMES FOR IDENTIFI SITES.	CATION AND SEC	URITY PURPOSES WHILE WORKING AT OCCUPIED
_	TYP.	TYPICAL	3. SEPARATION OF CONS	STRUCTION ARE	AS FROM OCCUPIED SPACES. CONSTRUCTION
-	U.O.N.	UNLESS OTHERWISE NOTED	AREAS WHICH ARE UN OCCUPIED BY DISTRICT	IDER THE CONTI I STAFF OR STU	ROL OF A CONTRACTOR AND THEREFORE NOT DENTS SHALL BE SEPARATED FROM OCCUPIED
-	WAC	WINDOW AIR CONDITIONER	AREAS. PROVISIONS CONTAMINANTS INTO C	SHALL BE MAD	E TO PREVENT THE PASSAGE OF DUST AND OF THE BUILDING. PERIODIC INSPECTION AND
-	WB	WET BULB TEMPERATURE	REPAIRS OF THE CONT DUST OR CONTAMINAN	AINMENT BARRIE TS. GYPSUM BO	RS MUST BE MADE TO PREVENT EXPOSURE TO ARD MUST BE USED TO EXIT WAYS OR OTHER
-	WG	INCHES OF WATER GAUGE	AREAS THAT REQUIRE F USED ONLY FOR A VAPO	FIRE RATED SEPA	RATION. HEAVY DUTY PLASTIC SHEETING MAY BE R AIR INFILTRATION BARRIER, AND SHALL NOT BE
-	WMS	WIRE MESH SCREEN	USED TO SEPARATE OC 3.1. A SPECIFIC STAIRW	CUPIED SPACES F ELL AND/OR ELEV	ROM CONSTRUCTION AREAS. (ATOR SHOULD BE ASSIGNED FOR
	-	TEE DOWN	CONSTRUCTION WC NOT USE CORRIDOF	ORKER USE DURIN RS, STAIRS OR EL	IG WORK HOURS. IN GENERAL, WORKERS MAY EVATORS DESIGNATED FOR STUDENTS OR
C	-	ELBOW DOWN	SCHOOL STAFF. 3.2. LARGE AMOUNTS O	F DEBRIS MUST B	E REMOVED BY USING ENCLOSED CHUTES OR A
_0	-	TEE UP	SIMILAR SEALED SY HALLS OF OCCUPIEI	STEM. THERE SH	ALL BE NO MOVEMENT OF DEBRIS THROUGH E BUILDING. NO MATERIAL SHALL BE DROPPED OR
· · ·	-	ELBOW UP	3.3. ALL OCCUPIED PAR	THE WALLS OF TH	E BUILDING. NG AFFECTED BY RENOVATION ACTIVITY SHALL
А	-	CONCENTRIC REDUCER	BE CLEANED AT THE DURING A CONSTRU	E CLOSE OF EACH	I WORKDAY. SCHOOL BUILDINGS OCCUPIED SHALL MAINTAIN REQUIRED HEALTH, SAFETY AND
Л	-	ECCENTRIC REDUCER	EDUCATIONAL CAPA	ABILITIES AT ALL 1	IMES THAT CLASSES ARE IN SESSION.
	-	FLOW ARROW	4. CONSTRUCTION AND MA OF 60 DBA IN OCCUPI	AINTENANCE OPE ED SPACES OR	RATIONS SHALL NOT PRODUCE NOISE IN EXCESS SHALL BE SCHEDULED FOR TIMES WHEN THE
	EX.	EXISTING TO REMAIN	BUILDING OR AFFECT ABATEMENT MEASURES	ED BUILDING S SHALL BE TAKEN	PACES ARE NOT OCCUPIED OR ACOUSTICAL I.
	NEW	NEW WORK	5. THE CONTRACTOR SHA	ALL BE RESPONS	BIBLE FOR THE CONTROL OF CHEMICAL FUMES,
	DEM.	EXISTING TO BE REMOVED	GASES, AND OTHER C ENGINES, ROOFING, PA	VING, PAINTING, E	TRODUCED BY WELDING, GASOLINE OR DIESEL ETC. TO ENSURE THEY DO NOT ENTER OCCUPIED
CD	-	CONDENSATE DRAIN		DING OR AIR INTA	
LPS	-	LOW PRESSURE STEAM	6. THE CONTRACTOR SHA WHICH RESULT IN "OFF	LL BE RESPONSIE -GASSING" OF V(DLATILE ORGANIC COMPOUNDS SUCH AS GLUES,
LPR	-	LOW PRESSURE STEAM CONDENSATE RETURN	PAINTS, FURNITURE, C CURED OR VENTILATEI	ARPETING, WALL D IN ACCORDAN	COVERING, DRAPERY, ETC. ARE SCHEDULED, CE WITH MANUFACTURERS RECOMMENDATIONS
RL	-	REFRIGERANT LIQUID	BEFORE A SPACE CAN B		
RS	-	REFRIGERANT SUCTION	7. LARGE AND SMALL ASB NOT BE PERFORMED	ESTOS ABATEME WHILE THE TH	E BUILDING IS OCCUPIED." NOTE, IT IS OUR
	-	THERMOSTAT	INTERPRETATION THAT WING OR MAJOR SECTION	THE TERM "BUILD	THAT CAN BE COMPLETELY ISOLATED FROM THE
(H)	-	HUMIDISTAT	PORTION OF THE BUILDING	VITH SEALED NO	TAIN COMBUSTIBLE CONSTRUCTION. THE ISOLATED
	-	MOTORIZED DAMPER	OCCUPIED PORTION AN SEALED AT THE ISOLATI	D VENTILATION S ON BARRIER.	SYSTEMS MUST BE PHYSICALLY SEPARATED AND
			I		

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GENERAL NOTES

- CONTRACT DRAWINGS, AS FAR AS THEY RELATE TO THE GENERAL ARRANGEMENT AND LOCATION OF EQUIPMENT, SHEET METAL, AND PIPING, SHALL BE UNDERSTOOD AS DIAGRAMMATIC. ANY CHANGES TO EQUIPMENT. SHEET METAL. AND PIPING LOCATIONS NECESSARY TO AVOID INTERFERENCE WITH OTHER TRADES SHALL BE MADE AT NO EXTRA COST. AND MUST BE APPROVED BY THE ENGINEER.
- 2. THE MECHANICAL CONTRACTOR SHALL INSTALL FIRE DAMPERS WITH ACCESS DOORS IN ALL DUCTS PENETRATING FIRE RATED WALLS, WHETHER SPECIFICALLY SHOWN ON THE DRAWINGS OR NOT.
- 3. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL VOLUME DAMPERS IN DUCTWORK AS REQUIRED TO BALANCE THE AIRFLOW AT ALL REGISTERS AND DIFFUSERS TO THE CFM'S INDICATED ON PLAN. WHETHER SPECIFICALLY SHOWN ON THE DRAWINGS OR NOT.
- PROVIDE ALL PIPE OPENINGS THROUGH PARTITIONS WITH PIPE SLEEVES. FOR PIPES PENETRATING FIRE RATED PARTITIONS, THE SPACE BETWEEN THE PIPE AND THE SLEEVE SHALL BE SEALED WITH FIRE STOPPING MATERIAL. PENETRATIONS FOR PIPING SHALL BE MADE BY CORE DRILLING WHENEVER POSSIBLE
- 5. ACOUSTICALLY LINE ALL ALL DUCTWORK 20'-0" DOWNSTREAM OF RTU(S) AND DOAS(S). ALSO, ACOUSTICALLY LINE ALL DUCTWORK 5'-0" DOWNSTREAM OF VAV BOXES ACOUSTIC LINING SHALL BE 1" THICK.
- 6. DUCT-MOUNTED SMOKE DETECTORS AND SAMPLING TUBES SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL INSTALL EACH SAMPLING TUBE IN THE DUCTWORK. THE ELECTRICAL CONTRACTOR SHALL INSTALL AND WIRE EACH SMOKE DETECTOR. THE MECHANICAL CONTRACTOR SHALL NOT BRANCH OFF ANY DUCT REQUIRING A DUCT SMOKE DETECTOR BEFORE THE DUCT SMOKE DETECTOR. LOCATE SMOKE DETECTORS IN SERVICEABLE AREAS, NOT IN SHAFTS.
- ALL MOTOR STARTERS AND DISCONNECT SWITCHES FOR HVAC EQUIPMENT SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED. DISCONNECT SWITCHES FURNISHED BY THE MECHANICAL CONTRACTOR FOR HVAC EQUIPMENT SHALL BE HEAVY DUTY TYPE.
- 8. THE MECHANICAL CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE BEGINNING OF WORK, AND SHALL COORDINATE ALL WORK WITH OTHER TRADES.
- 9. DUCT DIMENSIONS SHOWN ON MECHANICAL DRAWINGS REFER TO INSIDE CLEAR DUCT DIMENSIONS. WHERE DUCTWORK IS LINED, THE MECHANICAL CONTRACTOR SHALL INCREASE THE SIZE OF DUCT TO COMPENSATE FOR LINING.
- 10. LOCATE THERMOSTATS AND TEMPERATURE SENSORS 5'-6" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. COORDINATE LOCATION WITH FURNITURE, CABINETS, ETC. FURNISH LOCKING TAMPERPROOF COVER FOR ALL NEW THERMOSTATS IN PUBLIC AREAS.
- 11. COORDINATE DUCTWORK, GRILLE, DIFFUSER AND REGISTER LOCATIONS WITH LIGHTS, SMOKE DETECTORS, AND THE ARCHITECTURAL PLANS.
- 12. THE MECHANICAL CONTRACTOR SHALL NOTE THAT, IN ADDITION TO THE SPECIFICATIONS AND DETAILS GIVEN IN THESE PLANS FOR PIPE HANGERS AND SUPPORTS, ALL HANGERS AND SUPPORTS SHALL BE DESIGNED AND INSTALLED IN COMPLIANCE WITH APPLICABLE SEISMIC CODES.
- 13. ALL EXPOSED DUCTWORK LOCATED IN AREAS WHERE THERE IS NO CEILING SHALL BE ROUND OR OVAL SPIRAL DUCTWORK, INTERNALLY LINED, PRIMED AND FINISHED PAINTED WITH FLAT ENAMEL. COORDINATE COLOR SELECTION WITH ARCHITECTURAL PLANS.
- 14. THE MECHANICAL CONTRACTOR SHALL SUBMIT FOR REVIEW A COMPOSITE SHOP DRAWING, FULLY COORDINATED WITH ALL OTHER TRADES, INDICATING DUCTWORK, PLUMBING AND SPRINKLER PIPING, SMOKE DETECTORS, LIGHTS, CONDUITS, DIFFUSERS, GRILLES, ETC.
- 15. ALL WORK SHALL COMPLY WITH STATE BUILDING CODE, LOCAL BUILDING CODE, ENERGY CODE, AND SED REQUIREMENTS. IN CASE OF CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND A GOVERNING CODE OR ORDINANCE, THE MORE STRINGENT STANDARD SHALL APPLY.
- 16. DURING CONSTRUCTION, ALL OPEN OR INCOMPLETE DUCTWORK SHALL BE CAPPED AIRTIGHT WITH HEAVY POLYETHYLENE PLASTIC. AFTER THE INSTALLATION OF DUCTWORK, REGISTERS, GRILLES, AND DIFFUSERS, THE CONTRACTOR SHALL BLANK OFF ALL REGISTERS, GRILLES, AND DIFFUSERS WITH HEAVY POLYETHYLENE PLASTIC AND TAPE AIR TIGHT, IN AREAS THAT ARE UNDER CONSTRUCTION, UNTIL WORK IS COMPLETE IN THOSE AREAS. FLOOR REGISTERS AND GRILLES SHALL ALSO BE COVERED WITH 1/8" MASONITE.
- 17. WHEN GENERAL CONSTRUCTION IS COMPLETE. VACUUM CLEAN ALL DIFFUSERS. REGISTERS. GRILLES. AND HVAC EQUIPMENT IN THE PROJECT AREA OR SERVING THE PROJECT AREA. REMOVE ANY CONSTRUCTION DEBRIS. REPLACE ALL AIR FILTERS WITH NFW
- 18. THE OWNER'S PERMANENT HVAC EQUIPMENT (NEW AND EXISTING) SHALL NOT BE USED BY ANY CONTRACTOR DURING CONSTRUCTION FOR TEMPORARY HEATING, COOLING, OR VENTILATION. IF TEMPORARY HEATING, COOLING, OR VENTILATION IS REQUIRED AT ANY POINT DURING CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE TEMPORARY HEATING, COOLING, OR VENTILATION EQUIPMENT, DUCTWORK, CONTROLS, AND POWER AT HIS OWN EXPENSE.
- 19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY VENTILATION AND EXHAUST AIR WHEN WELDING OR SOLDERING OPERATIONS ARE PERFORMED, AS REQUIRED BY OSHA.
- 20. WHERE EXISTING BUILDING STRUCTURAL COMPONENTS HAVE FIREPROOF MATERIAL, ANY AREA THAT IS DISTURBED OR DAMAGED AS A RESULT OF MECHANICAL WORK, INCLUDING THE INSTALLATION OF HANGERS FOR PIPING, DUCTWORK, OR EQUIPMENT, SHALL BE PATCHED WITH UL AND FM APPROVED FIREPROOFING TO MATCH EXISTING.
- 21. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL NECESSARY PERMITS AND FOR PAYING RELATED FEES.
- 22. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL CUTTING, PATCHING, CORE DRILLING, ACCESS PANELS. PAINTING. AND FINAL RESTORATION REQUIRED TO FACILITATE THE INSTALLATION OF HVAC DUCTWORK, CONTROL CONDUITS, AND PIPING, INCLUDING ABOVE CEILINGS AND IN SHAFTS THAT WILL NOT BE REPLACED OR OPENED UNDER ANY OTHER SCOPE OF WORK RELATED TO THIS PROJECT. CONTRACTOR TO REMOVE AND REPLACE CEILINGS, AND OPEN AND PATCH SHAFTS AND WALLS, AS REQUIRED TO EXECUTE THE MECHANICAL WORK.
- 23. ALL ROOF WORK ASSOCIATED WITH PENETRATIONS FOR NEW DUCTWORK AND REFRIGERANT PIPING & CONTROL WIRING SHALL BE MADE BY THE BONDED ROOF CONTRACTOR.
- 24. REPLACE FILTERS FOR ALL RTU(S), DOAS(S) AND INDOOR VRF UNITS AFTER CONSTRUCTION IS COMPLETE.
- 25. ALL DUCTWORK SHALL BE PRESSURE TESTED AND INSPECTED PRIOR TO CONCEALMENT IN GENERAL CONSTRUCTION OR INSTALLATION OF HUNG CEILINGS.

ADD ALTERNATE NOTES

ADD ALTERNATE #1

THE CONTRACTOR SHALL PROVIDE AN ADD ALTERNATE PRICE FOR THE FULL INSTALLATION OF THE FOLLOWING SYSTEMS INCLUDING ALL RELATED INDOOR HEAT PUMP UNITS. REFRIGERANT AND CONDENSATE PIPING, DUCTWORK AND ACCESSORIES, REGISTERS, POWER, FIRE ALARM AND CONTROLS & ANY & ALL DEMOLITION & PATCHING. COORDINATE WITH ARCHITECTURAL AND ELECTRICAL PLANS.

• DOAS UNIT #3, #4, #5 AND ASSOCIATED ACCUs #6, #7, #8

VRF SYSTEMS ACCUS #2 & #3 AND ALL ASSOCIATED INDOOR HEAT PUMP UNITS

ADD ALTERNATE #2

THE CONTRACTOR SHALL PROVIDE AN ADD ALTERNATE PRICE FOR THE FULL INSTALLATION OF THE FOLLOWING SYSTEMS INCLUDING ALL RELATED INDOOR HEAT PUMP UNITS, REFRIGERANT AND CONDENSATE PIPING, DUCTWORK AND ACCESSORIES, REGISTERS, POWER, FIRE ALARM AND CONTROLS & ANY & ALL DEMOLITION & PATCHING. COORDINATE WITH ARCHITECTURAL AND ELECTRICAL PLANS.

• DOAS UNIT #1 & #2 AND ASSOCIATED ACCUS #4 & #5

VRF SYSTEM ACCU #1 AND ALL ASSOCIATED INDOOR HEAT PUMP UNITS

COMMISSIONING NOTES

REFER TO SPECIFICATION SECTION 230800. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIRING A 3RD PARTY COMMISSIONING AGENT.

PRIOR TO COMMISSIONING, THE CONTRACTOR SHALL PROVIDE A STATEMENT CONFIRMING THAT ALL SYSTEMS ARE FULLY OPERATIONAL AND ALL PRE-FUNCTIONAL TESTS AND CHECKS LISTED BELOW HAVE BEEN SUCCESSFULLY COMPLETED. SUBMIT A COPY OF ALL CHECK SHEETS FOR ENGINEER REVIEW AND APPROVAL.

PRE-FUNCTIONAL TESTS AND CHECKS (PREREQUISITES FOR COMMISSIONING):

- THE CONTRACTOR SHALL PERFORM THE FOLLOWING AT A MINIMUM -
- ENSURE THAT ALL SUBMITTALS ARE COMPLETED AND APPROVED BY ENGINEER AND COMMISSIONING AGENT
- CERTIFY THAT ALL SYSTEMS TO BE COMMISSIONED, SUBSYSTEMS AND EQUIPMENT HAVE BEEN INSTALLED, CALIBRATED AND STARTED; ACCORDING TO THE CONTRACT DOCUMENTS COMPLETE. ALL MANUFACTURER STARTUP REQUIREMENTS.
- CERTIFY THAT ALL RELEVANT INSTRUMENTATION AND CONTROL SYSTEMS HAVE BEEN COMPLETED AND CALIBRATED; ARE OPERATING ACCORDING TO CONTRACT DOCUMENTS; AND THAT PRETEST SET POINTS HAVE BEEN RECORDED.
- CERTIFY THAT TESTING, ADJUSTING AND BALANCING (TAB) PROCEDURES HAVE BEEN COMPLETED AND THE TAB REPORT HAS BEEN SUBMITTED, DISCREPANCIES CORRECTED AND CORRECTIVE WORK APPROVED BY THE ENGINEER
- SET SYSTEMS, SUBSYSTEMS AND EQUIPMENT TO OPERATING MODE TO BE TESTED (E.G., NORMAL SHUT DOWN, NORMAL AUTO POSITION, NORMAL MANUAL POSITION, AND ALARM CONDITIONS)
- VERIFY EACH OF THE SYSTEMS ONCE IT IS OPERATING IN A STEADY STATE CONDITION. REFER TO THE SEQUENCE OF OPERATIONS.
- INSPECT AND VERIFY THE POSITION OF EACH DEVICE AND INTERLOCK IDENTIFIED ON CHECKLISTS. SIGN OFF EACH ITEM AS ACCEPTABLE OR FAILED. REPEAT THIS TEST FOR EACH OPERATING CYCLE THAT APPLIES TO SYSTEM BEING TESTED.
- SIMULATE CONDITIONS REQUIRED IN ORDER TO TEST ALL SAFETY CUTOUTS, ALARMS AND INTERLOCKS WITH LIFE SAFETY SYSTEMS DURING EACH MODE OF OPERATION WHEN APPLICABLE.
- ANNOTATE CHECKLIST OR DATA SHEET WHEN A DEFICIENCY IS OBSERVED. VERIFY EQUIPMENT INTERFACE WITH MONITORING AND CONTROL SYSTEM.

AFTER PRE-AFUNCTIONAL TESTING IS COMPLETE, THE CONTRACTOR SHALL PERFORM FUNCTIONAL TESTING IN THE PRESENCE OF THE COMMISSIONING AGENT FOR THE SYSTEMS LISTED BELOW IN ACCORDANCE WITH THE COMMISSIONING SPECIFICATIONS: ROOFTOP UNITS

- DOAS UNITS
- CONDENSING UNITS
- VRF SYSTEMS
- CONTROL DAMPERS AND CONTROL VALVES
- AUTOMATIC CONTROLS

AFTER FUNCTIONAL TESTING, THE COMMISSIONING AGENT (CX) SHALL ISSUE A REPORT OF TEST RESULTS AND DOCUMENT ANY DEFICIENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CORRECTION OF ALL DEFICIENCIES. THE CONTRACTOR SHALL SEND A WRITTEN RESPONSE TO THE OWNER/ENGINEER/CX AGENT THAT AN OPEN ISSUE HAS BEEN RECTIFIED. THE DEFICIENCY SHALL NOT BE CONSIDERED RESOLVED UNTIL THE APPROPRIATE RETESTING IS PERFORMED WITH THE CX AGENT.

PRIOR TO TURNOVER (OWNER ACCEPTANCE). A COMPLETE AND SUCCESSFUL DEMONSTRATION OF ALL SYSTEM OPERATING FUNCTIONS AND ALARMS SHALL BE PERFORMED BY THIS CONTRACTOR IN THE PRESENCE OF THE OWNERS REPRESENTATIVE AND COMMISSIONING AGENT.

IN ADDITION TO THE ABOVE. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

- PARTICIPATE IN MAINTENANCE ORIENTATION AND INSPECTION MEETING.
- PARTICIPATE IN PROCEDURES MEETING FOR TESTING.
- EXECUTE INSTALLATION PRE-FUNCTIONAL CHECK SHEETS.
- SUPPORT FUNCTIONAL TESTING WITH QUALIFIED TECHNICIANS. RESPOND TO CX DEFICIENCIES IN ACCORDANCE WITH OWNER SCHEDULE.
- PARTICIPATE IN FINAL REVIEW AT ACCEPTANCE MEETING.
- NOTIFY COMMISSIONING AGENT AT MINIMUM TWO WEEKS IN ADVANCE OF ANY TESTING.



Scale

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• DOAS UNIT #1 & #2 AND ASSOCIATED ACCUs #4 & #5

• VRF SYSTEM ACCU #1 AND ALL ASSOCIATED INDOOR HEAT PUMP UNITS

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DEMOLISH EXISTING THERMOSTAT AND ASSOCIATED CONTROL WIRING TO EXISTING HOT WATER CONTROL VALVE.

TUCKAHOE



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EXISTING SUPPLY AND RE DUCTWORK AND ALL ASS DIFFUSERS AND REGISTE REMAIN. TYPICAL FOR AL DUCTWORK AND AIR OUT CONNECTED TO THIS SYS DEMOLISH EXISTING SUPF BRANCH DUCTWORK FOR CLASSROOM ON THIS FLC REPLACE DUCTWORK WIT ACOUSTICALLY LINED DU	TURN DCIATED RS TO L LETS TEM. — PLY EACH DOR. H CTWORK		H H
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PART PLANS Date 09/10/2021 NKGD0239.00 Drawn / Checked NW/RS M201

Issue

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ADD ALTERNATE NOTES

ADD ALTERNATE #1 THE CONTRACTOR SHALL PROVIDE AN ADD ALTERNATE PRICE FOR THE FULL INSTALLATION OF THE FOLLOWING SYSTEMS INCLUDING ALL RELATED INDOOR HEAT PUMP UNITS, REFRIGERANT AND CONDENSATE PIPING, DUCTWORK AND ACCESSORIES, REGISTERS, POWER, FIRE ALARM AND CONTROLS & ANY & ALL DEMOLITION & PATCHING. COORDINATE WITH ARCHITECTURAL AND ELECTRICAL PLANS. • DOAS UNIT #3, #4, #5 AND ASSOCIATED ACCUs #6, #7, #8 • VRF SYSTEMS ACCUS #2 & #3 AND ALL ASSOCIATED INDOOR HEAT PUMP UNITS ADD ALTERNATE #2 THE CONTRACTOR SHALL PROVIDE AN ADD ALTERNATE PRICE FOR THE FULL INSTALLATION OF THE FOLLOWING SYSTEMS INCLUDING ALL RELATED INDOOR HEAT PUMP UNITS. REFRIGERANT AND CONDENSATE PIPING. DUCTWORK AND ACCESSORIES, REGISTERS, POWER, FIRE ALARM AND CONTROLS & ANY & ALL DEMOLITION & PATCHING. COORDINATE WITH ARCHITECTURAL AND ELECTRICAL PLANS. • DOAS UNIT #1 & #2 AND ASSOCIATED ACCUs #4 & #5



MECHANICAL NEW WORK 2ND FLOOR PART PLAN

VRF SYSTEM ACCU #1 AND ALL ASSOCIATED INDOOR HEAT PUMP UNITS





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VRF SYSTEM ACCU #1 AND ALL ASSOCIATED INDOOR HEAT PUMP UNITS



THE CONTRACTOR SHALL PROVIDE AN ADD ALTERNATE PRICE FOR THE FULL INSTALLATION OF THE FOLLOWING DUCTWORK AND ACCESSORIES, REGISTERS, POWER, FIRE ALARM AND CONTROLS & ANY & ALL DEMOLITION &

DUCTWORK AND ACCESSORIES, REGISTERS, POWER, FIRE ALARM AND CONTROLS & ANY & ALL DEMOLITION &





MECHANICAL CAFETERIA NEW WORK PLAN SCALE: 1/8" = 1'-0"

EXISTING SINK SHALL BE CLEANED, RUST REMOVED AND THEN POLISHED WITH STAINLESS STEEL POLISHING PRODUCT. ALL EXPOSED SANITARY, VENT, HOT AND COLD WATER EXPOSED AT SINK SHALL BE COMPLETELY COVERED WITH WHITE ZESTON 2000 PVC INSULATED PIPING AND FITTING COVERS. APPLY AS PER MANUFACTURER WITH PERMA WELL ADHESIVE. ALL LABELS AND FLOW ARROWS SHALL BE APPLIED OVER PVC JACKET. NEW 4" SANITARY PIPING ABOVE NEW

CEILING AND SOFFIT. PROVIDE OFFSETS AND TRANSITIONS AS REQUIRED TO RAISE PIPING ABOVE NEW CEILING AND CONNECT TO THE EXISTING PIPING IN THE KITCHEN. COORDINATE WITH ARCHITECTURAL PLANS.

NEW 1" COLD WATER AND HOT WATER PIPING ABOVE NEW CEILING AND SOFFIT. PROVIDE OFFSETS AND TRANSITIONS AS REQUIRED TO RAISE PIPING ABOVE NEW CEILING. COORDINATE WITH ARCHITECTURAL PLANS.

PROVIDE NEW STEAM TRAP, SHUT OFF VALVE AND DANFOSS VALVE FOR EACH RADIATOR. PROVIDE NEW COVER AND COORDINATE WIHT ARCHITECTURAL PLANS. TYPICAL FOR 5.

14"X6" SUPPLY SIDEWALL DIFFUSER. TYPICAL.

PROVIDE NEW STEAM TRAP, SHUT OFF VALVE AND DANFOSS VALVE FOR EACH RADIATOR. PROVIDE NEW COVER AND COORDINATE WIHT ARCHITECTURAL PLANS. TYPICAL FOR 2.









STORAGE

- EXISTING STEAM CONVECTOR. PROVIDE NEW SHUT OFF VALVE, STEAM TRAP AND DANFOSS VALVE. TYPICAL FOR 4.

8"x8" CEILING RETURN GRILLE.



TUCKAHOE

MIDDLE/HIGH

SCHOOL

ALTERATIONS

TUCKAHOE UNION FREE SCHOOL DISTRICT

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4 1 1/4:1/2 1/4:1/2 1/4:1/2 1/4:1/2 PRHR043A	ARNU183V1A4 #AC-3-12 ARNU183V1A4 #AC-3-13 ARNU183V1A4 #AC-3-14 ARNU183V1A4 #AC-3-14	T Room T Room T Room T Room		CUMENTS
	ARNU183V1A4 #AC-3-9 ARNU183V1A4 #AC-3-10 ARNU183V1A4 #AC-3-11 #4	T Room T Room T Room		
PRHR043A	ARNU183V1A4 #AC-3-5 ARNU183V1A4 #AC-3-6 ARNU183V1A4 #AC-3-7 ARNU183V1A4 #AC-3-8 ARNU183V1A4 #AC-3-8	T Room T Room T Room T Room	KEY PLAN NOTE: ALL IDEAS, DESIGNS, AR REPRESENTED BY THIS DRAWII KAEYER, GARMENT, & DAVIDSO FOR USE ON THIS PROJECT. NC OR PLANS SHALL BE USED BY C WITHOUT THE WRITTEN PERMIS WRITTEN DIMENSIONS ON THIS SCALED DIMENSIONS. CONTRA AND CONDITIONS ON THE JOB / VARIATIONS FROM DIMENSIONS. BE SUBMITTED TO THIS OFFICE FABRICATION. ALTERATIONS BY ANY PERSON DOCUMENT, UNLESS ACTING UI ARCHITECT WHOSE PROFESSIO OF TITLE VII, SECT. 69.5 (b) OF N COPYRIGHT KAEYER, GARMENT ALL RIGHTS RESERVED.	AND THE ARCHITECT MUST BE NOTIFIED OF ANY SAND WAY, OF ANY ITEM CONTAINED ON THIS NOT STALL SAND YEARS ANY OF ANY SAND WERE CREATED IN A CHITECTS, PC (KG&D), AND WERE CREATED INE OF SUCH IDEAS, DESIGNS, ARRANGEMENTS OR DISCLOSED TO ANY PURPOSE WHATSOEVER SSION OF (KG&D). DRAWING SHALL HAVE PRECEDENCE OVER CTOR SHALL VERIFY ALL ACTUAL DIMENSIONS AND THE ARCHITECT MUST BE NOTIFIED OF ANY S AND CONDITIONS SHOWN. SHOP DETAILS MUST FOR APPROVAL BEFORE PROCEEDING WITH IN ANY WAY, OF ANY ITEM CONTAINED ON THIS NDER THE DIRECTION OF THE LICENCED DNAL SEAL IS AFFIXED HERETO, IS A VIOLATION NEW YORK STATE LAW. I'F DAVIDSON ARCHITECTS & ENGINEERS, PC
1/4:1/2 1/4:1/2 1/4:1/2 1/4:1/2	ARNU183V1A4 #AC-3-1 ARNU183V1A4 #AC-3-2 ARNU183V1A4 #AC-3-3 ARNU183V1A4 #AC-3-4	T Room T Room T Room T Room	TS THE REAL	075260 OFESSIONAL
LTERNATE NOTES RNATE #1 RACTOR SHALL PROVIDE AN ADD A DWING SYSTEMS INCLUDING ALL R DENSATE PIPING, DUCTWORK AND TROLS & ANY & ALL DEMOLITION & F TRICAL PLANS. UNIT #3, #4, #5 AND ASSOCIATED A YSTEMS ACCUS #2 & #3 AND ALL AS RNATE #2 RACTOR SHALL PROVIDE AN ADD A DWING SYSTEMS INCLUDING ALL R DENSATE PIPING, DUCTWORK AND	ALTERNATE PRICE FOR THE FULL IN ELATED INDOOR HEAT PUMP UNITS ACCESSORIES, REGISTERS, POWEF PATCHING. COORDINATE WITH ARC CCUs #6, #7, #8 SSOCIATED INDOOR HEAT PUMP UN ALTERNATE PRICE FOR THE FULL IN ELATED INDOOR HEAT PUMP UNITS ACCESSORIES, REGISTERS, POWEF	ISTALLATION OF 5, REFRIGERANT R, FIRE ALARM CHITECTURAL IITS ISTALLATION OF 5, REFRIGERANT R, FIRE ALARM	1 03/31/2022 IS No. Date Sheet Title VR DIA Job No. NKGD0239. Scale AS NOTED	SSUED FOR BID Issue FRISER GRAMS OD Date .00 Date
TRICAL PLANS. UNIT #1 & #2 AND ASSOCIATED AC YSTEM ACCU #1 AND ALL ASSOCIA	CUs #4 & #5 TED INDOOR HEAT PUMP UNITS	UTHECTUKAL	Sheet Number	1501

VRF SYSTEM ACCU #1 AND ALL ASSOCIATED INDOOR HEAT PUMP UNITS

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PROVIDE GRILLE KIT FOR EACH 4-WAY CEILING CASSETTE. PROVIDE AUXILIARY HEATER KIT - PRARH1 FOR ALL UNITS SHOWN ON PLAN TO CONTROL AN EXISTING HOT WATER CONTROL VALVE.

UNITS BASED ON LG. PROVIDE MULTISITE CRC1 CONTROLLER MODEL #PREMTBVC0 FOR EACH UNIT. CONTROLLER HAS DIGITAL DISPLAY AND IS BACNET COMPATIBLE. INTEGRAL CONDENSATE PUMP CAPABLE OF 27" LIFT. CONDENSATE DRAIN PIPE SIZE SHALL BE 3/4" FOR ALL UNITS.

						VRF SYSTI	EM - INDOG	OR HEAT PL	JMP UNIT S	SCHEDULE								
INDOOR UNIT DESIGNATION	AC-1-1	AC-1-2	AC-1-3	AC-1-4	AC-1-5	AC-1-6	AC-1-7	AC-1-8	AC-1-9	AC-1-10	AC-1-11	AC-2-1	AC-2-2	AC-2-3	AC-2-4	AC-2-5	AC-2-6	1
MANUFACTURER	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG]
MODEL	ARNU153TQD4	ARNU153TQD4	ARNU153TQD4	ARNU183TQD4	ARNU183TQD4	ARNU183TQD4	ARNU183TQD4	ARNU183TQD4	ARNU183TQD4	ARNU153TQD4	ARNU183TQD4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4]
ТҮРЕ	4-WAY CASSETTE	4-WAY CASSETTE	4-WAY CASSETTE	4-WAY CASSETTE	4-WAY CASSETTE	4-WAY CASSETTE	CEILING SUSPEND											
COOLING CAPACITY (BTU/HR)	15400	15400	15400	19100	19100	19100	19100	19100	19100	15400	19100	19100	19100	19100	19100	19100	19100	
HEATING CAPACITY (BTU/HR)	17100	17100	17100	21500	21500	21500	21500	21500	21500	17100	21500	21500	21500	21500	21500	21500	21500 <	>
REFRIGERANT TYPE	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	
FAN:		•	•		-	-			7	-	*	-	-	-]
CFM (LOW/MED/HIGH)												424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	
VOLTS/Ø/Hz	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	
MCA (AMPS)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1.21	1.21	1.21	1.21	1.21	1.21]
MOCP (AMPS)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
1																		1
AC-2-7 AC-2-8	AC-2-9	AC-2-10	AC-2-11	AC-3-1	AC-3-2	AC-3-3	AC-3-4	AC-3-5	AC-3-6	AC-3-7	AC-3-8	AC-3-9	AC-3-10	AC-3-11	AC-3-12	AC-3-13	AC-3-14	AC-3-15
LG LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG
ARNU183V1A4 ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4
CEILING SUSPEND CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND					
19100 19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100
21500 21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500
R410A R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
424/441/477 424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477
208/1/60 208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60
1.21 1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
15 15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15

							VRF SYST	em - Indoc	DR HEAT PL	JMP UNIT S	CHEDULE								
UNIT DESIGN	ATION	AC-1-1	AC-1-2	AC-1-3	AC-1-4	AC-1-5	AC-1-6	AC-1-7	AC-1-8	AC-1-9	AC-1-10	AC-1-11	AC-2-1	AC-2-2	AC-2-3	AC-2-4	AC-2-5	AC-2-6	1
CTURER		LG																	
		ARNU153TQD4	ARNU153TQD4	ARNU153TQD4	ARNU183TQD4	ARNU183TQD4	ARNU183TQD4	ARNU183TQD4	ARNU183TQD4	ARNU183TQD4	ARNU153TQD4	ARNU183TQD4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	
		4-WAY CASSETTE	CEILING SUSPEND	_															
G CAPACITY (BTU/HR)	15400	15400	15400	19100	19100	19100	19100	19100	19100	15400	19100	19100	19100	19100	19100	19100	19100	
G CAPACITY (I	BTU/HR)	17100	17100	17100	21500	21500	21500	21500	21500	21500	17100	21500	21500	21500	21500	21500	21500	21500 <	\$
ERANT TYPE		R410A																	
			•		-		-	-	-	-		-	7			-	-	-	
W/MED/HIGH)													424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	
ð/Hz		208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	
1PS)		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1.21	1.21	1.21	1.21	1.21	1.21	
MPS)		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
																			1
AC-2-7	AC-2-8	AC-2-9	AC-2-10	AC-2-11	AC-3-1	AC-3-2	AC-3-3	AC-3-4	AC-3-5	AC-3-6	AC-3-7	AC-3-8	AC-3-9	AC-3-10	AC-3-11	AC-3-12	AC-3-13	AC-3-14	AC-3-15
LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG
IU183V1A4	ARNU183V1A4																		
IG SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND
19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100
21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500
R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
4/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477
208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60
1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21

							VRF SYST	em - Indoc	DR HEAT PL	JMP UNIT S	CHEDULE								
INDOOR UNIT DESIGN	ATION	AC-1-1	AC-1-2	AC-1-3	AC-1-4	AC-1-5	AC-1-6	AC-1-7	AC-1-8	AC-1-9	AC-1-10	AC-1-11	AC-2-1	AC-2-2	AC-2-3	AC-2-4	AC-2-5	AC-2-6	1
MANUFACTURER		LG]																
MODEL		ARNU153TQD4	ARNU153TQD4	ARNU153TQD4	ARNU183TQD4	ARNU183TQD4	ARNU183TQD4	ARNU183TQD4	ARNU183TQD4	ARNU183TQD4	ARNU153TQD4	ARNU183TQD4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4]
TYPE		4-WAY CASSETTE	CEILING SUSPEND																
COOLING CAPACITY (I	BTU/HR)	15400	15400	15400	19100	19100	19100	19100	19100	19100	15400	19100	19100	19100	19100	19100	19100	19100	
HEATING CAPACITY (E	BTU/HR)	17100	17100	17100	21500	21500	21500	21500	21500	21500	17100	21500	21500	21500	21500	21500	21500	21500 <	>
REFRIGERANT TYPE		R410A																	
FAN:]
CFM (LOW/MED/HIGH)													424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	
VOLTS/Ø/Hz		208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	
MCA (AMPS)		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1.21	1.21	1.21	1.21	1.21	1.21	
MOCP (AMPS)		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
L																			1
AC-2-7	AC-2-8	AC-2-9	AC-2-10	AC-2-11	AC-3-1	AC-3-2	AC-3-3	AC-3-4	AC-3-5	AC-3-6	AC-3-7	AC-3-8	AC-3-9	AC-3-10	AC-3-11	AC-3-12	AC-3-13	AC-3-14	AC-3-15
LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG
ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4	ARNU183V1A4
CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND	CEILING SUSPEND
19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100	19100
21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500
R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
<																			
424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477	424/441/477
208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60	208/1/60
1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15

WARRANTY SHALL BE 10 YEARS PARTS AND 10 YEARS ON THE COMPRESSORS. 10. CONTRACTOR SHALL HIRE THE MANUFACTURER'S INSTALLATION TECHNICIAN FOR INSTALLATION AND STARTUP. PROVIDE STARTUP REPORTS TO THE ENGINEER FOR REVIEW AND APPROVAL

THE OPERATING RANGE IN COOLING WILL BE 5°F TO 122°F.

8. THE OPERATING RANGE IN HEATING WILL BE -22°F TO 61°F.

SPACE TEMPERATURE.

PROVIDE RUBBER VIBRATION ISOLATION FOR EACH OUTDOOR UNIT PROVIDE SYSTEM CONTROLLER MODEL PACS5A000 AC SMART 5 CONTROLLER FOR GRAPHICAL INTERFACE, REMOTE MONITORING AND CONTROL.

UNITS BASED ON LG. MECHANICAL CONTRACTOR SHALL PROVIDE BASE PAN HEATER MODEL ZPLT1A52A FOR EACH UNIT. ELECTRICAL CONTRACTOR SHALL INSTALL THE BASE PAN HEATER.

NDOOR UNIT DESIGNATION	ACCU-1	ACCU-2	ACCU-3	ACCU-4	ACCU-5	ACCU-6	ACCU-7	ACCU-8	ACCU-9
LOCATION	ROOF								
MODEL	ARUM192BTE5	ARUM168BTE5	ARUM241BTE5	ARUM144BTE5	ARUM144BTE5	ARUM144BTE5	ARUM144BTE5	ARUM144BTE5	ARUM144BTE5
ТҮРЕ	HEAT RECOVERY								
UNITS SERVED	SEE RISER								
REFRIGERANT TYPE	R410A								
NOMINAL COOLING / HEATING CAPACITY (MBH)	192/216	168/189	233/243	144/162	144/162	144/162	144/162	144/162	144/162
HEATING CAPACITY @10F (MBH)	216	189	243	162	162	162	162	162	162
No. FANS	2	2	2	2	2	2	2	2	2
No. COMPRESSORS	2	2	2	2	2	2	2	2	2
REFRIGERANT PIPE SIZES	SEE RISER								
/OLTS/Ø/Hz	208/3/60	208/3/60	208/3/60	208/3/60	208/3/60	208/3/60	208/3/60	208/3/60	208/3/60
FLA/MCA/MOCP	52.1/57.9/80	48.3/53.6/70	56.8/63.2/80	46.1/51.1/70	46.1/51.1/70	46.1/51.1/70	46.1/51.1/70	46.1/51.1/70	46.1/51.1/70
ER/IER	12.4 / 25.9	12.4 / 25.9	12.4 / 25.9	12.4 / 25.9	12.4 / 25.9	12.4 / 25.9	12.4 / 25.9	12.4 / 25.9	12.4 / 25.9
WEIGHT (LBS.)	659	639	666	666	666	666	666	666	666
EIGHT x WIDTH x LENGTH (INCHES)	66.5 x 29.9 x 48.8								

VARIABLE AIR VOLUME BOX SCHEDULE													
VAV-4													
TITUS													
0 DESV-12													
12													
16x16													
-													
1600													
0													
2000													
-													

VAV BOXES SHALL BE SINGLE DUCT COOLING/HEATING, WITH DIGITAL ELECTRONIC PRESSURE INDEPENDENT CONTROLS.

2. VAV BOX CONTROLLER SHALL BE CAPABLE OF "DUAL" MAXIMUM CONTROL SEQUENCE, I.E. HEATING & COOLING MAXIMUMS.

3. MAXIMUM RADIATED NC<30, MAXIMUM DISCHARGE NC<28, UNLESS OTHERWISE NOTED IN SCHEDULE ABOVE. MAXIMUM DESIGN AIRFLOW FOR EACH VAV BOX SHALL NOT EXCEED 80% OF MANUFACTURER'S LISTED MAXIMUM AIRFLOW FOR THAT BOX SIZE, UNLESS OTHERWISE NOTED IN SCHEDULE ABOVE.

5. VAV BOXES SHALL HAVE 1" ACOUSTIC LINING.

6. VAV BOXES SHALL BE U.L. LISTED AND LABELED.

7. VAV BOXES SHALL BE PROVIDED WITH SHEETMETAL CONTROL ENCLOSURE BY TERMINAL MANUFACTURER. FURNISH AND INSTALL ALL VAV BOX CONTROLS.

VRF SYSTEM - OUTDOOR CONDENSING UNIT SCHEDULE

CONDENSING UNIT VRF SYSTEMS SHALL MAINTAIN CONTINUOUS HEATING DURING DEFROST OPERATION. REVERSE CYCLE (COOLING MODE) DEFROST OPERATION SHALL NOT BE PERMITTED DUE TO THE POTENTIAL REDUCTION IN SPACE TEMPERATURE. MULTIPLE CONDENSING UNIT VRF SYSTEMS SHALL MAINTAIN CONTINUOUS HEATING DURING OIL RETURN OPERATION. REVERSE CYCLE (COOLING MODE) OIL RETURN DURING HEATING OPERATION SHALL NOT BE PERMITTED DUE TO THE POTENTIAL REDUCTION IN

EQUIPMENT NOTES

- SUPPLY AIR REGISTERS (TYPE A): SHALL BE TITUS MODEL 300FL, ALUMINUM CONSTRUCTION, WITH 3/4" SPACING, DOUBLE DEFLECTION AIRFOIL BLADES, OPPOSED BLADE VOLUME DAMPER IN NECK, SIZE AND CFM AS NOTED ON PLANS. FINISH SHALL BE BAKED ON ENAMEL. SUBMIT COLOR CHART FOR APPROVAL. FRAME SHALL BE SUITABLE FOR SURFACE MOUNTING. COORDINATE WITH ARCHITECTURAL PLANS.
- SIDEWALL RETURN AIR REGISTERS (TYPE B): SHALL BE TITUS MODEL 355FL, ALUMINUM CONSTRUCTION, WITH 1/2" SPACING, 35° FIXED DEFLECTION AIRFOIL BLADES, OPPOSED BLADE VOLUME DAMPER IN NECK, SIZE AND CFM AS NOTED IN TABLE ON PLANS. FINISH SHALL BE BAKED ON ENAMEL. SUBMIT COLOR CHART FOR APPROVAL. FRAME SHALL BE SUITABLE FOR SURFACE MOUNTING. COORDINATE WITH REFLECTED CEILING PLANS.
- HEAVY DUTY RETURN GRILLE (TYPE C): SHALL BE TITUS MODEL 30RL. A STEEL HEAVY DUTY RETURN GRILLE WITH 3/8" BLADE SPACING, 0 DEGREE DEFLECTION, BLADES PARALLEL TO LONG DIMENSION. SIZE AND CFM AS NOTED ON PLANS. FINISH SHALL BE BAKED ON ENAMEL. SUBMIT COLOR CHART FOR APPROVAL. COORDINATE WITH ARCHITECTURAL PLANS.
- 4. SUPPLY CEILING DIFFUSER (TYPE D): SHALL BE TITUS MODEL TMS, STEEL CONSTRUCTION, 24"X24", NECK SIZE AND CFM AS NOTED ON PLANS. FINISH SHALL BE BAKED ON ENAMEL. SUBMIT COLOR CHART FOR APPROVAL. FRAME SHALL BE SUITABLE FOR GRID CEILING MOUNTING. COORDINATE WITH REFLECTED CEILING PLANS.
- EGGCRATE RETURN CEILING GRILLE (TYPE E): SHALL BE TITUS MODEL 50F, ALUMINUM 5. CONSTRUCTION, 24"X24" UNLESS OTHERWISE NOTED. CFM AS NOTED ON PLANS. FINISH SHALL BE BAKED ON ENAMEL. SUBMIT COLOR CHART FOR APPROVAL. FRAME SHALL BE SUITABLE FOR GRID CEILING MOUNTING. COORDINATE WITH RCP.
- OUTDOOR DUCT JACKET: SHALL BE INSULATED AS PER THE SPECIFICATIONS AND COVERED WITH POLYGUARD INSUL-WRAP 50W MEMBRANE FOR WATERPROOF INSULATION JACKET. USE ONLY MATERIALS AND ADHESIVES COMPATIBLE WITH POLYGUARD INSULATION SYSTEM. INSTALL AS PER MANUFACTURERS RECOMMENDATIONS.
- REFRIGERANT PIPE INSULATION: SHALL BE AP ARMAFLEX PIPE INSULATION. 3/4" THICK UNSLIT, TO BE INSTALLED BEFORE FINAL CONNECTION. FIELD FABRICATE FITTING INSULATION WITH MITER-CUTS. ALL BUTT JOINTS AND SEAMS ARE TO BE SEALED WITH 66-03-02-03-0-002-024 ARMSTRONG 520 ADHESIVE. ALL INSULATION INSTALLED OUTDOORS SHALL BE COATED WITH ARMSTRONG ARMAFLEX FINISH, AS PER THE MANUFACTURERS RECOMMENDATIONS.
- 8. PIPE INSULATION JACKETING FOR INDOOR EXPOSED PIPES: SHALL BE WHITE ZESTON 2000 PVC COVERS FOR PIPING AND FITTINGS. JACKET ALL PIPING AND FITTING THAT ARE EXPOSED IN ANY ROOM. JACKET ALL PIPING EXPOSED TO VIEW IN CLASSROOMS. EQUIPMENT ROOMS ETC.
- 9. DOMESTIC COLD & HOT WATER PIPING: COPPER TYPE L ACCORDING TO STANDARD ASTM B88 WITH 95/5 SOLDERED FITTINGS ACCORDING TO STANDARD ASME B16.9. PIPING SHALL BE INSULATED WITH 1-1/2" THICK GLASS FIBER INSULATION WITH A K VALUE OF 0.23 AT 75°F, NON COMBUSTIBLE, AND A MINIMUM DENSITY OF 3.5 LBS/CU FT.
- 10. SANITARY PIPING: CAST IRON ACCORDING TO STANDARD ASTM A888 AND CISPI 301 WITH HUBLESS COUPLINGS ACCORDING TO STANDARD CISPI 310 AND ASTM C-1277.

ADD ALTERNATE NOTES

ADD ALTERNATE #1

THE CONTRACTOR SHALL PROVIDE AN ADD ALTERNATE PRICE FOR THE FULL INSTALLATION OF THE FOLLOWING SYSTEMS INCLUDING ALL RELATED INDOOR HEAT PUMP UNITS, REFRIGERANT AND CONDENSATE PIPING, DUCTWORK AND ACCESSORIES, REGISTERS. POWER, FIRE ALARM AND CONTROLS & ANY & ALL DEMOLITION & PATCHING. COORDINATE

- WITH ARCHITECTURAL AND ELECTRICAL PLANS. • DOAS UNIT #3, #4, #5 AND ASSOCIATED ACCUs #6, #7, #8
- VRF SYSTEMS ACCUS #2 & #3 AND ALL ASSOCIATED INDOOR HEAT PUMP UNITS

ADD ALTERNATE #2

THE CONTRACTOR SHALL PROVIDE AN ADD ALTERNATE PRICE FOR THE FULL INSTALLATION OF THE FOLLOWING SYSTEMS INCLUDING ALL RELATED INDOOR HEAT PUMP UNITS, REFRIGERANT AND CONDENSATE PIPING, DUCTWORK AND ACCESSORIES, REGISTERS, POWER. FIRE ALARM AND CONTROLS & ANY & ALL DEMOLITION & PATCHING. COORDINATE WITH ARCHITECTURAL AND ELECTRICAL PLANS.

- DOAS UNIT #1 & #2 AND ASSOCIATED ACCUS #4 & #5
- VRF SYSTEM ACCU #1 AND ALL ASSOCIATED INDOOR HEAT PUMP UNITS

DI				I RECUVERT S	CHEDULE		
DESIGNATION	DOAS-1	DOAS-2	DOAS-3	DOAS-4	DOAS-5	DOAS-6	DESIGNATION
LOCATION	ROOF	ROOF	ROOF	ROOF	ROOF	ROOF	LOCATION
AREA SERVED	SCIENCE CLASSROOMS	SCIENCE CLASSROOMS	OLD CLASSROOMS	OLD CLASSROOMS	OLD CLASSROOMS	CAFETERIA	AREA SERVED
MANUFACTURER	LG	LG	LG	LG	LG	LG	MANUFACTURER
MODEL	ARND30UDBE4	ARND30UDBE4	ARND30UDBE4	ARND30UDBE4	ARND30UDBE4	ARND30UDBE4	MODEL
WEIGHT (LBS)	2,326	2,326	2,326	2,326	2,326	2,326	NOMINAL CAPACITY (TONS)
WEIGHT OF ROOF CURB (LBS)							WEIGHT OF UNIT (LBS)
DESIGN DATA:	• •	•					WEIGHT OF ROOF CURB (LBS)
SUPPLY AIR (CFM)	3000	2550	2970	2450	2180	3000	EER
OUTDOOR AIR (CFM)	3000	2550	2970	2450	2180	3000	DESIGN DATA:
RETURN AIR (CFM)	3000	2550	2970	2450	2180	3000	SUPPLY AIR (CFM)
EXHAUST (CFM)	3000	2550	2970	2450	2180	3000	OUTDOOR AIR (CFM)
SUMMER OA TEMP (°F) DB/WB	92/74	92/74	92/74	92/74	92/74	92/74	RETURN AIR (CFM)
SUMMER RA TEMP (°F) DB/WB	75/62	75/62	75/62	75/62	75/62	75/62	- SPILL AIR (CFM)
WINTER OA TEMP (°F)	10	10	10	10	10	10	SUMMER OA TEMP (°F) DB/WB
WINTER RA TEMP (°F)	70	70	70	70	70	70	SUMMER RA TEMP (°F) DB/WB
	10	10	10			10	WINTER OA TEMP (°F)
	3000	2550	2070	2450	2180	3000	WINTER RA TEMP (°F)
	10	10	10	10	10	10	- CONDENSER:
	10	10	2252	2252	2252	10	COMPRESSOR No./TYPE
	2352	2/4.6	2352	2352	2352	2352	REFRIGERANT TYPE
	2/4.0	2/4.0	2/4.0	2/4.0	2/4.0	2/4.0	No. OF REFRIGERANT CIRCUITS
	2000	0550	2070	0450	0400	2000	No. OF FANS
	3000	2550	2970	2450	2180	3000	FLA (AMPS) EA.
	10	10	10	10	10	10	AMBIENT TEMP. (°F)
	2352	2352	2352	2352	2352	2352	FILTERS:
ESP/ISP (IN H_2O)	2/4.6	2/4.6	2/4.6	2/4.6	2/4.6	2/4.6	OA-FILTER (QTY / SIZE)
ENERGY RECOVERY MODULE - ENTHALPY WHEEL TY	PE:						MAIN FILTER ((QTY / SIZE)
SUMMER E.A.T. (°F) DB/WB	92/74	92/74	92/74	92/74	92/74	92/74	EVAPORATOR COIL:
SUMMER L.A.T. (°F) DB/WB	79.2/66	79.2/66	79.2/66	79.2/66	79.2/66	79.2/66	E.A.T. (°F) DB/WB
SUMMER RECOVERY SEN./TOT (MBH)	41.7/94.5	35.4/80.3	41.3/93.5	34.0/77.2	30.3/68.7	41.7/94.5	– L.A.T. (°F) DB/WB
WINTER E.A.T./L.A.T. (°F)	10/44	10/44	10/44	10/44	10/44	10/44	SENS./TOTAL CAPACITY (MBH)
WINTER RECOVERY (MBH)	110.7	94.1	109.6	90.4	80.4	110.7	HEATING:
MOTOR HP	10	10	10	10	10	10	CAPACITY (MBH)
ESP/TSP (IN H ₂ O)	2/4.6	2/4.6	2/4.6	2/4.6	2/4.6	2/4.6	– E.A.T./L.A.T. (°F)
DX COOLING COIL:							SUPPLY FAN:
E.A.T. (°F) DB/WB	79.2/66	79.2/66	79.2/66	79.2/66	79.2/66	79.2/66	
L.A.T. (°F) DB/WB	55/55	55/55	55/55	55/55	55/55	55/55	$= ESP/ISP (IN H_2O)$
CAPACITY (MBH) SENS./TOTAL	78.8/105.3	67.0/89.5	78.0/104.2	64.4/86.0	57.3/76.6	78.8/105.3	- BHP/HP
HOT GAS REHEAT COIL:							- RPM
E.A.T./L.A.T. (°F)	55/70	55/70	55/70	55/70	55/70	55/70	
CAPACITY (MBH)	48.8	41.5	48.3	43.9	35.8	48.8	
DX COIL (ASHP - HEATING MODE)							
E.A.T./L.A.T. (°F) (WITH ENERGY RECOVERY)	44/75	44/75	44/75	44/75	44/75	44/75	
CAPACITY (MBH) (WITH ENERGY RECOVERY)	100.9	85.8	100.0	82.4	73.2	100.9	
E.A.T./L.A.T. (°F) (WITHOUT ENERGY RECOVERY)	10/54	10/61	10/54	10/64	10/70	10/54	
CAPACITY (MBH) (WITHOUT ENERGY RECOVERY)	142.7	142.7	142.7	142.7	142.7	142.7	
FILTER:							
PRE-FILTERS SUPPLY & EXHAUST	2" MERV 8	2" MERV 8	2" MERV 8	2" MERV 8	2" MERV 8	2" MERV 8	HIGH STATIC DRIVE 100% MODUL ATING
	(2) 25X20 RETURN AIR	(2) 25X20 RETURN AIR	(2) 25X20 RETURN AIR	(2) 25X20 RETURN AIR	(2) 25X20 RETURN AIR	(2) 25X20 RETURN AIR	FURNISH EXTRA DF
QUANTITY/SIZE	(2) 25X25 OUTDOOR AIR (4) 25X20 SUPPLY AIR	(2) 25X25 OUTDOOR AIR (4) 25X20 SUPPLY AIR	(2) 25X25 OUTDOOR AIR (4) 25X20 SUPPLY AIR	(2) 25X25 OUTDOOR AIR (4) 25X20 SUPPLY AIR	(2) 25X25 OUTDOOR AIR (4) 25X20 SUPPLY AIR	(2) 25X25 OUTDOOR AIR (4) 25X20 SUPPLY AIR	UNIT SHALL BE MOU FINISHED ROOF SU
							VIBRATION CURB S
	200/2/20	000/0/00	200/2/20	200/2/20	200/2/20	200/2/20	PROVIDE 4" FIELD PROVIDE THE FOLLOW!
	208/3/60	208/3/60	208/3/60	208/3/60	208/3/60	208/3/60	
MGA/MOCP (AMPS)	24.8/35	24.8/35	24.8/35	24.8/35	24.8/35	24.8/35	AUTOMATION SYST
NOTES: 1. EACH PACKAGED UNIT INCLUDES THE FOLLO • RETURN PLENUM WITH SIDE INLET OR BO • EXHAUST FAN WITH DISCHARGE OUTLET • ENERGY RECOVERY W/ ENTHALPY WHEE • FLAT FILTER MODULE FOR OUTSIDE AIR A • DX COIL WITH AIR SOURCE HEAT PUMP O	WING COMPONENTS: DTTOM INLET (SEE PLANS). EL AND OAI HOODS. AND EXHAUST AIR. COIL AND HOT GAS REHEAT COIL.						DRIVES SHALL BE I SINGLE POINT EXTI MOTOR STARTERS 3. CONTRACTOR SHALL H STARTUP REPORTS TO
 SUPPLY FAN AND DISCHARGE PLENUM W FLAT FILTER FOR SUPPLY AIR. 		ILEI (SEE PLANS).					EQU

- FLAT FILTER FOR SUPPLY AIR.
- 2. PROVIDE THE FOLLOWING FOR EACH UNIT: • SINGLE POINT EXTERNAL POWER CONNECTION AT UNIT. PROVIDE FACTORY INSTALLED, UNIT-MOUNTED, NON-FUSED LOCAL DISCONNECT SWITCH. • EACH UNIT SHALL BE CONNECTED TO THE PACS5A000 AC SMART 5 CONTROLLER FOR GRAPHICAL INTERFACE, REMOTE MONITORING AND CONTROL.
- EXTRA FILTER SET FOR EACH UNIT. 3. CONTRACTOR SHALL HIRE THE MANUFACTURER'S INSTALLATION TECHNICIAN FOR INSTALLATION AND STARTUP. PROVIDE STARTUP REPORTS TO THE ENGINEER FOR REVIEW AND APPROVAL.

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• UNIT SHALL BE MOUNTED ON VIBRATION ISOLATION ROOF CURB. HEIGHT OF CURB IS TO BE COORDINATED WITH FINAL FINISHED ROOF SURFACE, INCLUDING DEVIATIONS DUE TO CRICKETS, ROOF DRAINS, ETC. LOWER PORTION OF VIBRATION CURB SHALL EXTEND 12" MINIMUM ABOVE FINISHED ROOF SURFACE. PROVIDE BLOCKING OR SIMILAR AS NECESSARY. MASON INDUSTRIES TYPE RSC OR EQUIVALENT.

ADD ADD A THE C THE F AND C AND C AND E • DC • VF ADD A THE C THE FO

	RTU-1	RTU-2
	LIBRARY	LIBRARY OFFICES
	CARRIER	CARRIER
	50LC0B14A3A5-1R5A0	50FCQA04A2A5-0F5C0
S)	12.5	3
	2234	570
LBS)	240	115
	12.40	14.30 SEER
	5300	900
	1300	130
	4000	770
	575	0
/WB	92/74	92/74
/WB	75/62	75/62
	10	10
	68	68
	2 P 4104	1 P 410A
CUITS	1 <u> </u>	۲4 IUA 1
	3	1
	1.3	1.5
	92	92
	4 / 16X25X1	1 / 20X24X1
	6 / 20X25X2	2 / 16X25X2
	80 7/6 <i>1</i> 0	70 3/63 P
	55/55	55/55
MBH)	147.7/164.5	26.4/27.0
	DUCT STEAM COIL (SC-1) (SEE BELOW)	HEAT PUMP
	180	13
	53.8/85.0	59.3/72
	5300	1000
	1.5	0.8
	2.86 BHP	0.41
	942 VFD	НОА
E POINT POWER CONN	IECTION:	
	208/3/60	208/3/60
	76.5/90	42/45
	12.6	14.3
	19.3	
PRIVE MOTOR. COORDI TING ECONOMIZER WIT A DRIVE BELT AND EX MOUNTED ON VIBRAT F SURFACE, INCLUDING RB SHALL EXTEND 12" ASON INDUSTRIES TY ELD INSTALLED FILTER OWING MOTOR CONTF TROLLER BY AUTOMAT SYSTEM. I HP OR GREATER SHA BE INVERTER DUTY R EXTERNAL POWER CC ERS. VAV UNITS SHALI LL HIRE THE MANUFAC S TO THE ENGINEER FO	NATE LEFT/RIGHT HAND FAN DRIVE IN FIELD TH DIFFERENTIAL ENTHALPY CONTROL AND TRA FILTER SET FOR EACH UNIT. TON ISOLATION ROOF CURB. HEIGHT OF CUP G DEVIATIONS DUE TO CRICKETS, ROOF DRA MINIMUM ABOVE FINISHED ROOF SURFACE. PE RSC OR EQUIVALENT. SECTION WITH HINGED ACCESS DOOR AND ROL OPTIONS FOR ALL UNITS: IC TEMPERATURE CONTROLS MANUFACTUR LL BE PREMIUM EFFICIENCY. ALL MOTORS F ATED & APPROVED FOR VARIABLE SPEED AN INNECTION AT UNIT, UNIT-MOUNTED DISCON HAVE FACTORY MOUNTED VFD'S WITH H-OP CTURER'S INSTALLATION TECHNICIAN FOR IN DR REVIEW AND APPROVAL.	ECONOMIZER HOOD. RB IS TO BE COORDINATED WITH FINAL AINS, ETC. LOWER PORTION OF PROVIDE BLOCKING OR SIMILAR AS PROVIDE MERV 10 FILTERS. ER, COMPATIBLE WITH THE BUILDING URNISHED WITH VARIABLE FREQUENCY ID TORQUE APPLICATIONS. NECT SWITCH, AND FACTORY INSTALLED -A. ISTALLATION AND STARTUP. PROVIDE
	NOTES	
STEAM COIL (SC-1) - S JNIT SHALL BE 40X24 DF 5PSI AND 0.13 WC SHALL BE COPPER AN COIL CONNECTION IN	SHALL BE SIMILAR TO SUPER RADIATO AND CAPABLE OF 180MBH HEATING C AIR PRESSURE DROP ACROSS THE CO ND FIN MATERIAL SHALL BE ALUMINUM THE FIELD. REFER TO DETAIL ON M70	R COILS MODEL 40X24-1R-0.625/120. APACITY WITH A STEAM PRESSURE DIL WITH 5,300 CFM. TUBE MATERIAI 1. COORDINATE RIGHT / LEFT HAND D2 FOR PIPING.
ADD ALTERN	IATE NOTES	
ADD ALTERNATE #1 THE CONTRACTOR SI	HALL PROVIDE AN ADD ALTERNATE PR TEMS INCLUDING ALL RELATED INDOC	RICE FOR THE FULL INSTALLATION OF HEAT PUMP UNITS, REFRIGERAN
THE FOLLOWING SYS AND CONDENSATE PI AND CONTROLS & AN AND ELECTRICAL PLA DOAS UNIT #3, #4	PING, DUCTWORK AND ACCESSORIES Y & ALL DEMOLITION & PATCHING. CC ANS. -, #5 AND ASSOCIATED ACCUS #6, #7, #	8

M602

AND ELECTRICAL PLANS. DOAS UNIT #1 & #2 AND ASSOCIATED ACCUS #4 & #5

• VRF SYSTEM ACCU #1 AND ALL ASSOCIATED INDOOR HEAT PUMP UNITS

AND CONTROLS & ANY & ALL DEMOLITION & PATCHING. COORDINATE WITH ARCHITECTURAL

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Served	Room	Room Name	Area	Occupar	псу Туре			Co	ode			Lab Area	Code EA	Design EA	Desig	in SA	Desig	n OA	Code	e OA
By	No.		(sq.ft.)	Category	Туре	Pers./1000	No. of	OA CFM /	OA CFM /	Dist	EA CFM /	SF	CFM	CFM	CFM	CFM /	%	CFM	CFM	CFM /
						sq.ft.	Occ.	Pers.	sq.ft.	Effective	sq.ft.					sq.ft.	w/o Div.			sq.ft.
DOAS-1	150	CLASSROON	850	Education	Classroom	25	21	10	0.18	1.0	-	-	-	365.0	365.0	0.4	100%	365	363	0.43
DOAS-1	151	CLASSROOM	950	Education	Classroom	25	23	10	0.18	1.0	-	-	-	415.0	415.0	0.4	100%	415	401	0.42
DOAS-1	152	CLASSROOM	1040	Education	Science	25	26	10	0.18	1.0	1.0	350.0	350.0	450.0	450.0	0.4	100%	450	447	0.43
DOAS-1	153	CLASSROON	870	Education	Classroom	25	21	10	0.18	1.0	-	-	1	370.0	370.0	0.4	100%	370	367	0.42
DOAS-1	250	CLASSROOM	1120	Education	Science	25	28	10	0.18	1.0	1.0	560.0	560.0	700.0	700.0	0.6	100%	700	482	0.43
DOAS-2	252	CLASSROOM	1090	Education	Science	25	27	10	0.18	1.0	1.0	600.0	600.0	700.0	700.0	0.6	100%	700	466	0.43
DOAS-2	251	PREP ROOM	140	Education	Science	25	3	10	0.18	1.0	1.0	140.0	140.0	250.0	250.0	1.8	100%	250	55	0.39
DOAS-1	253	CLASSROOM	1150	Education	Science	25	28	10	0.18	1.0	1.0	550.0	550.0	700.0	700.0	0.6	100%	700	487	0.42
DOAS-2	350	CLASSROOM	800	Education	Classroom	25	20	10	0.18	1.0	-	-	-	350.0	350.0	0.4	100%	350	344	0.43
DOAS-2	351	CLASSROON	1020	Education	Science	25	25	10	0.18	1.0	1.0	350.0	350.0	450.0	450.0	0.4	100%	450	434	0.43
DOAS-2	352	CLASSROOM	1020	Education	Science	25	25	10	0.18	1.0	1.0	350.0	350.0	450.0	450.0	0.4	100%	450	434	0.43
DOAS-2	353	CLASSROON	800	Education	Classroom	25	20	10	0.18	1.0	-	_	-	350.0	350.0	0.4	100%	350	344	0.43

						Ventilatio	n Index -	DOAS-3, D	OAS-4, DO	DAS-5 OLD	Classroon	าร					
Served	Room	Room Name	Area	Occupar	ncy Type		Co	ode		Distributio	Desig	gn SA	EA	Design	OA	Code	e OA
By	No.		(sq.ft.)	Category	Туре	Pers./1000	No. of	OA CFM /	OA CFM /	n n	CFM	CFM /	CFM	%	CFM	CFM	CFM /
						sq.ft.	Occ.	Pers.	sq.ft.	Effectivne		sq.ft.		w/o Div.			sq.ft.
DOAS-3	112	CLASSROOM	690	Education	Classroom	35	25	10	0.12	1.0	350.0	0.5	350.0	100%	350	333	0.48
DOAS-3	113	CLASSROOM	715	Education	Classroom	35	26	10	0.12	1.0	350.0	0.5	350.0	100%	350	346	0.48
DOAS-4	202	CLASSROOM	630	Education	Classroom	35	23	10	0.12	1.0	310.0	0.5	310.0	100%	310	306	0.49
DOAS-4	202B	CLASSROOM	380	Education	Classroom	35	14	10	0.12	1.0	200.0	0.5	200.0	100%	200	186	0.49
DOAS-4	203	CLASSROON	540	Education	Classroom	35	19	10	0.12	1.0	260.0	0.5	260.0	100%	260	255	0.47
DOAS-4	203A	CLASSROON	700	Education	Classroom	35	25	10	0.12	1.0	350.0	0.5	350.0	100%	350	334	0.48
DOAS-4	204	CLASSROON	525	Education	Classroom	35	19	10	0.12	1.0	260.0	0.5	260.0	100%	260	253	0.48
DOAS-5	210	CLASSROOM	455	Education	Classroom	35	16	10	0.12	1.0	230.0	0.5	230.0	100%	230	215	0.47
DOAS-5	211	CLASSROON	665	Education	Classroom	35	24	10	0.12	1.0	350.0	0.5	350.0	100%	350	320	0.48
DOAS-5	212	CLASSROON	580	Education	Classroom	35	21	10	0.12	1.0	300.0	0.5	300.0	100%	300	280	0.48
DOAS-5	205	CLASSROON	275	Education	Classroom	35	10	10	0.12	1.0	150.0	0.5	150.0	100%	150	133	0.48
DOAS-3	206	CLASSROON	715	Education	Classroom	35	26	10	0.12	1.0	350.0	0.5	350.0	100%	350	346	0.48
DOAS-3	207	CLASSROON	560	Education	Classroom	35	20	10	0.12	1.0	270.0	0.5	270.0	100%	270	267	0.48
DOAS-3	208	CLASSROON	680	Education	Classroom	35	24	10	0.12	1.0	325.0	0.5	325.0	100%	325	322	0.47
DOAS-3	209	CLASSROON	660	Education	Classroom	35	24	10	0.12	1.0	325.0	0.5	325.0	100%	325	319	0.48
DOAS-4	301	CLASSROON	315	Education	Classroom	35	12	10	0.12	1.0	170.0	0.5	170.0	100%	170	158	0.50
DOAS-4	302	CLASSROON	380	Education	Classroom	35	14	10	0.12	1.0	200.0	0.5	200.0	100%	200	186	0.49
DOAS-4	303	CLASSROON	900	Education	Classroom	35	32	10	0.12	1.0	450.0	0.5	450.0	100%	450	428	0.48
DOAS-4	304	CLASSROON	500	Education	Classroom	35	18	10	0.12	1.0	250.0	0.5	250.0	100%	250	240	0.48
DOAS-5	312	CLASSROON	500	Education	Classroom	35	18	10	0.12	1.0	250.0	0.5	250.0	100%	250	240	0.48
DOAS-5	313	CLASSROON	700	Education	Classroom	35	25	10	0.12	1.0	350.0	0.5	350.0	100%	350	334	0.48
DOAS-5	314	CLASSROON	380	Education	Classroom	35	14	10	0.12	1.0	200.0	0.5	200.0	100%	200	186	0.49
DOAS-5	309	CLASSROON	715	Education	Classroom	35	26	10	0.12	1.0	350.0	0.5	350.0	100%	350	346	0.48
DOAS-3	308	CLASSROOM	780	Education	Classroom	35	28	10	0.12	1.0	375.0	0.5	375.0	100%	375	374	0.48
DOAS-3	310	CLASSROOM	490	Education	Classroom	35	18	10	0.12	1.0	250.0	0.5	250.0	100%	250	239	0.49

	Ventilation Index - DOAS-6 Cafeteria																
Served	Room	Room Name	Area	Occupar	ncy Type		Co	ode		Distributio	Desig	gn SA	EA	Design	OA	Code	e OA
By	No.		(sq.ft.)	Category	Туре	Pers./1000	No. of	OA CFM /	OA CFM /	'n	CFM	CFM /	CFM	%	CFM	CFM	CFM /
						sq.ft.	Occ.	Pers.	sq.ft.	Effectivne		sq.ft.		w/o Div.			sq.ft.

	Ventilation Index - RTU-1 Library																
Served	Room	Room Name	Area	Occupat	псу Туре		C	ode		Distributio	Desig	In SA	EA	Design	I OA	Code	e OA
By	No.		(sq.ft.)	Category	Туре	Pers./1000	No. of	OA CFM /	OA CFM /	n	CFM	CFM /	CFM	%	CFM	CFM	CFM /
						sq.ft.	Occ.	Pers.	sq.ft.	Effectivne		sq.ft.		w/o Div.			sq.ft.
RTU-1		LIBRARY	3,124	PUBLIC S	Libraries	10	31	5.0	0.12	0.8	3,000.0	1.0	0.0	25%	736	664	0.21
RTU-1		MEDIA	495	EDUCATIO	Media	25	12	10.0	0.12	0.8	1,000.0	2.0	0.0	25%	245	229	0.46
RTU-1		CORRIDOR	265	PUBLIC S	Corridor	0	0	0.0	0.06	0.8	300.0	1.1	0.0	25%	74	20	0.08

	Ventilation Index - RTU-2 Offices & Vestibule																
Serve	d Room	Room Name	Area	Occupa	ncy Type		C	ode		Distributio	Desig	gn SA	EA	Desigr	n OA	Code	e OA
By	No.		(sq.ft.)	Category	Туре	Pers./1000	No. of	OA CFM /	OA CFM /	n	CFM	CFM /	CFM	%	CFM	CFM	CFM
						sq.ft.	Occ.	Pers.	sq.ft.	Effectivne		sq.ft.		w/o Div.			sq.ft
RTU-	2	OFFICE	98	OFFICE	Office	5	0	5.0	0.06	0.8	125.0	1.3	0.0	13%	16	10	0.11
RTU-	2	OFFICE	137	OFFICE	Office	5	1	5.0	0.06	0.8	150.0	1.1	0.0	13%	20	15	0.11
RTU-	2	OFFICE	135	OFFICE	Office	5	1	5.0	0.06	0.8	150.0	1.1	0.0	13%	20	14	0.11
RTU-	2	OFFICE	115	OFFICE	Office	5	1	5.0	0.06	0.8	125.0	1.1	0.0	13%	16	12	0.11
RTU-	2	OFFICE	135	OFFICE	Office	5	1	5.0	0.06	0.8	150.0	1.1	0.0	13%	20	14	0.11

Ventilation Index - DOAS-1 & DOAS-2 Classrooms

	DOAS 4			Classroom	
JUAS-3,	DUA5-4,	DOA2-3	OLD	Classroom	IS

M603

Sheet Number

AIR CONDITIONING UNIT CONDENSATE DRAIN DETAIL SCALE: NONE

3

PIPE HANGER SCHEDULE									
PIPE DIA.	3/4"-2"	2 1/2"-3"	4"-5"	6"	8"-12"				
HANGER DIA.	3/8"	1/2"	5/8"	3/4"	7/8"				

- 1.) CLEVIS HANGERS WITH WELDED INSULATION SHIELDS SIMILAR TO RAUCH FIG. 100SH ON ALL PIPES LARGER THAN 1". 2.) FOR PIPES 1" OR SMALLER, A BAND HANGER WITH INSULATION SHIELD MAY BE
- USED SIMILAR TO RAUCH FIG. NO. 1ASH. 3.) FOR NON-INSULATED PIPE, INSULATION SHIELDS MAY BE OMITTED.
- 4.) ALL PIPE HANGERS SHALL BE GALVANIZED STEEL OR FACTORY PAINTED BLACK WITH ENAMEL
- 5.) FOR NON FERROUS PIPING WITHOUT INSULATION, ALL HANGERS SHALL BE COPPER PLATED OR FURNISHED WITH A DI-ELECTRIC BETWEEN PIPE AND HANGERS. 6.) WHERE EXISTING BUILDING STRUCTURAL COMPONENTS HAVE FIREPROOF
- MATERIAL, ANY AREA THAT IS DISTURBED OR DAMAGED AS A RESULT OF HANGER INSTALLATION SHALL BE PATCHED WITH UL AND FM APPROVED FIREPROOFING TO MATCH EXISTING.
- 7.) ANY AREA WITH A CEILING WHICH IS DISTURBED OR DAMAGED AS A RESULT OF HANGER INSTALLATION SHALL BE PATCHED. REPLACE WIRE LATH AND RE-CEMENT IF REQUIRED.

PIPE HANGER DETAIL

FOR DUCTS OVER 49" WIDE, THE STRAP HANGER SHALL BE TURNED UNDER THE BOTTOM OF THE DUCT. WHERE EXISTING BUILDING STRUCTURAL COMPONENTS HAVE FIREPROOF MATERIAL, ANY AREA THAT IS DISTURBED OR DAMAGED AS A RESULT OF HANGER INSTALLATION SHALL BE PATCHED WITH UL AND FM APPROVED FIREPROOFING TO MATCH EXISTING.

HANGER STRAP SCHEDULE DUCT SIZE HANGER SIZE MAXIMUM SPACING UP TO 2 SQ. FT. 1" x ¼1" 8'-0" 2 SQ. FT. TO 4 SQ. FT. 1" x ½1" 8'-0" 4 SQ. FT. TO 10 SQ. FT. 1" x ½1" 6'-0" 0VER 10 SQ. FT. 1" x ½1" 4'-0"										
DUCT SIZE HANGER SIZE MAXIMUM SPACING UP TO 2 SQ. FT. 1" x ¼6" 8'-0" 2 SQ. FT. TO 4 SQ. FT. 1" x ¼8" 8'-0" 4 SQ. FT. TO 10 SQ. FT. 1" x ½8" 6'-0" OVER 10 SQ. FT. 1" x ½8" 4'-0"	HANGER STRAP SCHEDULE									
UP TO 2 SQ. FT. $1" \times \frac{1}{16}"$ $8'-0"$ 2 SQ. FT. TO 4 SQ. FT. $1" \times \frac{1}{8}"$ $8'-0"$ 4 SQ. FT. TO 10 SQ. FT. $1" \times \frac{1}{8}"$ $6'-0"$ OVER 10 SQ. FT. $1" \times \frac{1}{8}"$ $4'-0"$	DUCT SIZE	HANGER SIZE	MAXIMUM SPACING							
2 SQ. FT. TO 4 SQ. FT. 1" x 1/8" 8'-0" 4 SQ. FT. TO 10 SQ. FT. 1" x 1/8" 6'-0" OVER 10 SQ. FT. 1" x 1/8" 4'-0"	UP TO 2 SQ. FT.	1" x ⅓ ₁₆ "	8'-0"							
4 SQ. FT. TO 10 SQ. FT. 1" x 1/8" 6'-0" OVER 10 SQ. FT. 1" x 1/8" 4'-0"	2 SQ. FT. TO 4 SQ. FT.	1" x 1⁄8"	8'-0"							
OVER 10 SQ. FT. 1" x 1/8" 4'-0"	4 SQ. FT. TO 10 SQ. FT.	1" x ½"	6'-0"							
	OVER 10 SQ. FT.	1" x ¹ ⁄ ₈ "	4'-0"							

