		1	2	3		4	5		6		7	8		9
		ABBREVIATIONS		1			SYMBOLS (AS AF	<u>'PLICABLE</u>	<u>:</u>)				AL NOTES	
A/E AAHX	-A- ARCHITECT / ENGINEER GA X AIR TO AIR HEAT EXCHANGER GAL	L GALLONS RA	-R- R/E RETURN OR EXHAUST RA RETURN AIR	ANNOTATION				PIPING		OTHER		 THE FIRST FIGURE OF DUCT SIZE INDICATES DIMENSION ACCESS PANELS IN HARD SUSPENDED CEILINGS ARE R ETC. ACCESS PANELS SHALL BE FURNISHED AND INSTA 	REQUIRED FOR ALL VALVES, TRAPS	PS, DAMPERS, CLEANOUTS, CONTROLS
AB AAV ACC	AIR BLENDER GH AUTOMATIC AIR VENT GPD AIR COOLED CONDENSER GPH	GRAVITY HOOD RAI D GALLONS PER DAY RAF H GALLONS PER HOUR RAF	RAD REFRIGERANT AIR DRYER RAF RADIO FREQUENCY RAHX ROTARY AIR HEAT EXCHANGER		TITLE MARK	[mmm 		——— HWS———	NEW PIPING (HOT WATER SUPPLY)	BFP	BACKFLOW PREVENTER	3. TOTAL EXTERNAL STATIC PRESSURE NOTED IN THE MERENEAT COILS, AIR TERMINALS ETC. 3. TOTAL EXTERNAL STATIC PRESSURE NOTED IN THE MERENEAT COILS, AIR TERMINALS ETC.		
ACCH ACCU ACD	H AIR COOLED CHILLER GPM U AIR-COOLED CONDENSING UNIT GPR AIR CONDITIONING UNIT GS		RAT RETURN AIR TEMPERATURE RCCH REMOTE CONDENSER CHILLER RCU RECIPROCATING CHILLER UNIT	M-201 SCALE: NOT TO SCALE	DETAIL OR PLAN NUMBER - 1	<u>} </u>	FLEXIBLE DUCT CONNECTION	——— (E)HWS———	EXISTING PIPING (HOT WATER SUPPLY)		BASKET STRAINER	4. FOR TYPICAL STEAM AND WATER PIPING CONNECTIONS) EQUIPMENT DETAILS.
ACD ACD-T	DAMPER,MODULATING	RD -H- RDS RE/ HUMIDIFIER RF	RD REFRIGERANT DISCHARGE RDS ROOM DATA SHEETS REA RELIEF AIR RF RETURN FAN			, [-		(D)HWS	EXISTING TO BE DEMOLISHED (HOT WATER SUPPLY)	00	DUPLEX BASKET STRAINER	DIFFUSER, REGISTER AND GRILLE SIZES SHOWN ON FLU WATER PIPE CONNECTIONS TO AIR HEATING AND COOL RETWEEN WATER AND AIR		ROVIDE COUNTER FLOW
AD AF AFCV	ACCESS DOOR H&CW AFTER FILTER HAC		RF RETURN FAN RG RETURN GRILLE RH RELATIVE HUMIDITY RHC REHEAT COIL	1 M-501	SECTION MARK A2T SECTION NUMBER - 1 SECTION FOUND IN M-301	}	TRANSFER AIR BOOT (STRAIGHT) (SEE	CHWS	CHILLED WATER - SUPPLY (NEW)	CV	CONTROL VALVE STATION	BETWEEN WATER AND AIR.7. WALL TYPE REGISTERS OR GRILLES ARE TO BE LOCATE FINISHED FLOOR AS INDICATED ON DRAWINGS. HOWEY	ED WITH BOTTOM OF REGISTER O	OR GRILLE AT AN ELEVATION ABOVE
g AFCV AFF AFMD AFW	ABOVE FINISHED FLOOR HC	HOSE BIBB RHO HEATING COIL RHO HEAD RL HOOD RL	RHC REHEAT COIL RHG REFRIGERANT HOT GAS RL REFRIGERANT LIQUID LINE RLA RUN LOAD AMPERE		010		SCHEDULE FOR REQUIREMENTS)	—— CHWR ——	CHILLED WATER - RETURN	PRV	PRESSURE REDUCING VALVE	FINISHED FLOOR AS INDICATED ON DRAWINGS. HOWEV FINAL ELEVATIONS OF THE REGISTERS OR GRILLES ON 8. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS	N THE WALL TO AVOID CONFLICTS V	S WITH OTHER BUILDING SERVICES.
AHU SHOP AP	AIR HANDLING UNIT HOA AMPERAGE HP ACCESS PANEL HP	A HAND/OFF/AUTOMATIC RO HEAT PUMP RPN HORSEPOWER RR	RO REVERSE OSMOSIS RPM REVOLUTIONS PER MINUTE RR RETURN REGISTER	$\begin{array}{c c} & & \\ \hline \end{array}$	DETAIL BOUNDARY B DETAIL NUMBER - 2	<u> </u>		HWS	HEATING HOT WATER - SUPPLY		STATION "Y" TYPE STRAINER	9. SEISMIC PROVISIONS REQUIRED - SEE SPECS. 9. SEISMIC PROVISIONS REQUIRED - SEE SPECS.	FUR EXACT LOCATIONS S. SELL.	ING DIFFUGENO, NEGIOTENO, ALE G
APD ARI	AIR PRESSURE DROP HPDT AIR CONDITIONING AND HPR REFRIGERATION INSTITUTE HPS	DT HIGH PRESSURE DRIP TRAP RS R HIGH PRESSURE RETURN (STEAM CONDENSATE) RTU S HIGH PRESSURE SUPPLY (STEAM) RV	RS REFRIGERANT SUCTION RTU ROOF TOP UNIT				TRANSFER AIR DUCT ELBOW WITH		HEATING HOT WATER - RETURN	' <i>></i> '		10. ALL PRESSURES LISTED ARE GAGE PRESSURE UNLESS 11. ALL DUCTWORK, INSULATION, EQUIPMENT AND INSTALL		IINIIMI IM ALL APPLICABLE CODES ANI
AS ASME	AIR SEPARATOR HRC E AMERICAN SOCIETY OF MECHANICAL HRD ENGINEERS HRP	C HEAT RECOVERY COIL D HEAT RECOVERY DEVICE P HYDRONIC RADIANT (CEILING) PANEL	-S-		SHEET KEYNOTE	ļ	ACOUSTIC LINING	—— HTWS ——	HIGH TEMPERATURE WATER - SUPPLY		DRAIN VALVE THERMOMET	GOVERNING AUTHORITIES HAVING JURISDICTION. 12. ALL DUCTWORK, INSULATION AND INSTALLATION SHALL		
ATT AW AXF	SOUND ANTTENUATOR HRW AIR WASHER HSTAT AXIAL FLOW HTM	W HEAT RECOVERY WHEEL SA TAT HUMIDISTAT SAE M HUMIDIFIER TERMINAL SAT	SA SUPPLY AIR SAD SOUND ATTENUATING DEVICE SAT SUPPLY AIR TEMPERATURE			ATT	SOUND ATTENUATOR	—— HTWR ——	HIGH TEMPERATURE WATER - SUPPLY	₩	ER GAUGE TRAP (TYPE AS NOTED)	GUIDELINES AND SMACNA STANDARDS. 13. PROVIDE VOLUME DAMPERS IN EACH SUPPLY AIR BRAN	NCH DUCT TO THE OUTLETS, AS FA	FAR AWAY FROM AIR OUTLET AS POSS
	HUM -B- HVU HW	HOT WATER SCI	OF IT IT IT OF IT		REVISION CLOUD (DELTA 1)	AIR TERMINALS					PUMP	AND ALL OTHER LOCATIONS AS INDICATED. INSTALL PR 14. CONTRACTOR SHALL OBTAIN AND FOLLOW ALL VA REQ	REFERABLY AT THE BRANCH TAKE OUIREMENTS, GUIDELINES, RULES A	EOFF. S AND PROCEDURES FOR CONSTRUCT
po BDD BDD BDD BDD BDD BDD BDD BDD BDD BD	BOILER HWC BUTTERFLY DAMPER HWHC BACKDRAFT DAMPER HWP	P HEATING HOT WATER PUMP SD	SCR SILICON CONTROLLED RECTIFIER SD SMOKE DETECTOR SD SUPPLY AIR DIFFUSER SD 1 SCHEMATIC DESIGN (SURMISSIONA)	1			CEILING SUPPLY DIFFUSER, TYPE A,	CWS	CONDENSER WATER - SUPPLY	А	AQUASTAT	CONTRACTOR SHALL PROVIDE INSURANCE IN ACCORDA 15. WHERE CONNECTING FLEXIBLE DUCTWORK TO CEILING	ANCE WITH THE BUILDING'S CERTI G DIFFUSERS AND CEILING REGIST	TIFICATE OF INSURANCE REQUIREMEN STERS, SIZE OF BRANCH & FLEXIBLE DU
BDR BFP BFT	BASE BOARD RADIATOR HWR BACKFLOW PREVENTER HWS BOILER PLANT FIRE TUBE HWUH	UH HOT WATER UNIT HEATER SDF	SD-1 SCHEMATIC DESIGN (SUBMISSION1) SD-2 SCHEMATIC DESIGN (SUBMISSION2) SDPR SMOKE DAMPER (DETURN)		DETAIL REFERENCE DETAIL NUMBER - 1	CD-A 100	THROW PATTERN 4-WAY, 100 CFM		CONDENSER WATER - RETURN	П	TEMPERATURE TRANSMITTER	SHALL BE SAME SIZE AS NECK OF CEILING DIFFUSER OF 16. ROOM THERMOSTATS SHALL BE CENTERED BESIDE THE	E LIGHT SWITCHES UNLESS OTHEF	ERWISE NOTED. CONTRACTOR TO VER
BG BHP BHW			SDR SMOKE DAMPER (RETURN) SDS SMOKE DAMPER (SUPPLY) SEN SENSIBLE HEAT	M-501/	DETAIL NUMBER - 1 DETAIL FOUND IN M-301	<u>CR-A</u> 100	CEILING RETURN REGISTER (GRILLE), TYPE A, 100 CFM		CONDENSATE DRAIN	×	PIPE ALIGNMENT GUIDE PIPE ANCHOR	EXACT LOCATIONS WITH ARCHITECT. MOUNT THERMOST. 17. ON NEW FLOOR PLANS, LIGHT DASHED/HIDDEN LINE INIT	STATS AT 48" ABOVE THE FLOOR. T DICATE EXISTING SERVICES AND H	THERMOSTAT AS PER VA STANDARD. HEAVY SOLID LINE INDICATE NEW
e BIW BIW BMT	BOILER BLOWDOWN HEAT EXCHANGER BACKWARD INCLINED WHEEL (FAN) BONE MARROW TRANSPLANT BOTTOM REGISTER	- - - -	SF SUPPLY FAN SG SUPPLY AIR GRILLE SH STEAM HUMIDIFIER SHC STEAM HEATING COIL	XXXXX	FEEDER TAG	EG-A 100	CEILING EXHAUST, TYPE A, 100 CFM	——— STM ———	STEAM		DIRECTION OF PIPE PITCH (DOWN)	MECHANICAL WORK. INTERSECTION OF EXISTING AND N HEAVY DASHED/HIDDEN LINE INDICATE MECHANICAL DE LINES INDICATE POINT OF DEMOLITION.		
BSC BSC	BOTTOM REGISTER II/O BIOLOGICAL SAFETY CABINETS IAQ BLOWOFF TANK CONTROL VALVE	INPUT/OUTPUT SHO INDOOR AIR QUALITY SI INVERTED BUCKET TRAP SP	SHC STEAM HEATING COIL SI SQUARE INCHES SP STATIC PRESSURE	xxxxx	FEEDER IAG		CEILING SUPPLY WITH BLANKING PLATE	—— GS ——	GLYCOL SUPPLY	>	DIRECTION OF FLOW ANCHOR	18. RUN ALL DUCTS AS TIGHT AS POSSIBLE TO BOTTOM OF NET INSIDE DIMENSIONS. ALL PIPE SIZES SHOWN ARE N		SE NOTED. DUCT DIMENSIONS SHOWN
BTC BTU BTUH BWT	BLOWOFF TANK CONTROL VALVE ICF BRITISH THERMAL UNIT ICU H BRITISH THERMAL UNIT PER HOUR ID	INTENSIVE CARE UNIT SPE INSIDE DIAMETER SPE	SP GR SPECIFIC GRAVITY SPD SUPPLY PROCESS AND DISTRIBUTION SPRV STEAM PRESSURE REDUCING VALVE SPS STATIC PRESSURE SENSOR		EQUIPMENT TAG, DESCRIPTION M, MARK		EXISTING CEILING SUPPLY TO REMAIN	GR	GLYCOL RETURN		REDUCER OR INCREASER	19. CONTRACTOR SHALL COORDINATE VOLTAGE AND PHAS TO ORDERING.		T W/THE ELECTRICAL CONTRACTOR F
BWT	BOILER PLANT WATER TUBE IFB IN -C- IN HG	INTEGRAL FACE AND BYPASS SPS INCHES SQ INCHES OF MERCURY SR	SPS STATIC PRESSURE SENSOR SQ FT SQUARE FOOT (FEET) SR SUPPLY AIR REGISTER SE STAINLESS STEEL		NUMBER 1		EXISTING CEILING RETURN TO REMAIN	HPS	STEAM - HIGH PRESSURE		ECCENTRIC REDUCER TOP CONNECTION, 45° OR 90°	20. CALIBRATE AND SET ALL THERMOSTATS SET POINTS TO REVERSE ACTING. COORDINATE WITH FAN COIL UNIT	AND ASSOCIATED CONTROL VALV	VE ACTUATORS. CONTROL SHALL BE
C CC	CENTIGRADE (CELSIUS) COOLING COIL COOLING	VC INCH WATER COLUMN SS VG INCH WATER GAUGE SSH _B INCH-POUND SSF	SS STAINLESS STEEL SSHX STEAM TO STEAM HEAT EXCHANGER SSR SOLID SEPARATOR STEAM TRAD				EXISTING CEILING EXHAUST TO REMAIN		STEAM - HIGH PRESSURE CONDENSATE		BOTTOM CONNECTION, 45° OR 90°	ADJUSTABLE TO PROVIDE A RANGE UP TO 5°F BETWEEI TERMINATING ALL HEATING AT A TEMPERATURE OF NO	N FULL HEATING AND FULL COOL MORE THAN 70°F, AND COOLING A	OLING, AND THE CAPABILITY OF GAT A TEMPERATURE NOT LESS THAN
CD CD-1	COOLING COIL CONDENSATE DRAIN IPLV CEILING DIFFUSER IRH CONSTRUCTION DOCUMENT (SUBMISSION1) IS	V INTEGRATED PART LOAD VALUE ST INFRARED HEATER SUI INSECT SCREEN SV	ST STEAM TRAP SUH STEAM UNIT HEATER SV STEAM PRESSURE REDUCING VALVE		LOUVER IN DOOR, MINIMUM 1.0 SQUARE FOOT FREE AREA		LINEAR SLOT DIFFUSER	MPC	STEAM - MEDIUM PRESSURE CONDENSATE		SIDE CONNECTION CAPPED OUTLET	21. ENTIRE INSTALLATION SHALL COMPLY WITH ALL GOVER FOR ALL NECESSARY PERMITS, FEES AND LICENSES.		
CD-2 CENT CFH	T CENTRIFUGAL IV CUBIC FEET PER HOUR		SVS STEAM VENT SILENCER SWHX STEAM TO WATER HEAT EXCHANGER	CNDC	CONDENIGATE	12X6 WR	12"X6" SIDEWALL SUPPLY REGISTER, 150	——LPS——	STEAM - LOW PRESSURE	——————————————————————————————————————	RISE OR DROP IN PIPE UNION	22. CONTRACTOR SHALL PROVIDE WRITTEN WARRANTY TO OWNER, FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE PROVIDE OF T	OF THE OWNER ACCEPTANCE.	, , , , , , , , , , , , , , , , , , , ,
cFM CFT CFP	CUBIC FEET CHEMICAL FEED PUMP kg		T&PCV TEMPERATURE AND PRESSURE	55	CONDENSATE	r	CFM 12"X6" SIDEWALL RETURN/EXHAUST	——LPC ——	STEAM - LOW PRESSURE CONDENSATE	0	PIPE UP PIPE DOWN	23. CONTRACTOR SHALL PROVIDE EQUIPMENT/MATERIAL S WITH SHOP DRAWINGS AT 1/4" SCALE INCLUDED IN THE S	SUBMITTALS.	
cG CH CHP	CEILING GRILLE kg/HR CHILLER kPa CHILLED WATER PUMP kW	KILOWATT TD	CONTROL VALVE TAB TESTING, ADJUSTING, BALANCE TD TEMPERATURE DIFFERENCE	—— UC——	UNDERCUT DOOR	150	REGISTER, 150 CFM		REFRIGERATION - LIQUID LINE	<	INVERTED BUCKET TRAP SET	24. UNLESS SPECIFICALLY INDICATED/INSTRUCTED, ALL EX OFF BY THE CONTRACTOR AND ALL ASSOCIATED COST	SHALL BE PROVIDED IN THE BID.	
E CHW CHR CHS			TDH TOTAL DYNAMIC HEAD TDS TOTAL DISSOLVED SOLIDS TEMP TEMPERATURE	•	POINT OF CONNECTION		ROUND SUPPLY DIFFUSER		REFRIGERATION - SUCTION LINE		INCLUDING PIPING ACCESSORIES FLOAT & THERMOSTATIC TRAP SET	25. UNLESS SPECIFICALLY INDICATED/INSTRUCTED, CONTR REQUIRED FOR ENTIRE MECHANICAL INSTALLATION THAT CERTIFICATE OF INSPECTION OR WRITTEN EVIDENCE OF	IAT IS IN THE SCPOE OF THIS PROJ	DJECT. CONTRACTOR SHALL FURNISH
CI CM CM	CAST IRON CARBON MONOXIDE L CUBIC METER L/h	TG LITER TP LITERS PER HOUR (OR LITERS/HOUR) TR	TG TRANSFER GRILLE TP TRAP TR TOP REGISTER	-	POINT OF DISCONNECTION	(3)	ROUND RETURN DIFFUSER		REFRIGERATION - RELIEF VENT		INCLUDING PIPING ACCESSORIES	26. IF ANY EQUIPMENT SUBMITTED BY THE CONTRACTOR IS		
CM/S CO CO2		LITERS PER MINUTE (OR LITERS/MINUTE) LITERS PER SECOND (OR LITERS/SECOND) TST LEAVING AIR TEMPERATURE TU	TSP TOTAL STATIC PRESSURE TSTAT THERMOSTAT TU TERMINAL UNIT	DUCT			FLOOR REGISTER (GRILLE)	FOS	FUEL OIL SUPPLY	~	PIPING ACCESSORIES	MATERIAL/LABOR FORM THAT IS REQUIRED PER CONTR CHANGES SHALL BE SUBMITTED AS A SHOP DRAWING F CREDIT DUE TO OWNERS BECAUSE OF SUCH CHJANGE	FOR OWNER'S/ENGINEER'S REVIEV	EW. SUBMITTALS SHALL INDICATE ANY
COMP COP CP	IP COMPRESSOR UNIT LBS/H	S/HR POUNDS PER HOUR LINEAR FOOT (FEET) LEAVING GLYCOL TEMPERATURE	TWU THRU-WALL UNIT		TO THE STATE OF LATE AND A	VAV BOX		FOR	FUEL OIL RETURN		THERMOMETER	CHARGES RESULTING FROM ADDITIONS OR CHANGES II REQUESTED MODIFICATION BY THIS CONTRACTOR. ALL AS AS-BUILT DRWAINGS FOR RECORDS AS PART OF PRO	N THE WORK OF OTHER TRADES N CHANGES SHALL BE INCORPORAT	NECESSARY TO ACCOMMODATE THE ATED IN THE DRAWINGS WHEN SUBMIT
CR CS CS CSG	CEILING REGISTER LH CONDENSATE STORAGE TANK LPG	LATENT HEAT LIQUID PROPANE GAS LOW PRESSURE RETURN (STEAM CONDENSATE) UC	UC UNDER CUT UC UNIT COOLER		SINGLE LINE DUCTWORK (NEW)	••••		FOV	FUEL OIL VENT		PRESSURE GAGE FLOW ELEMENT	27. THESE DRAWINGS INDICATED THE FINISHED REQUIREM INSTALL THE SPECIFIED WORK IN A MANNER DIFFERENT	MENTS OF THE MECHANICAL SYSTE	TEM. THE CONTRACTOR MAY DESIRE T
e CT CU CUH	COOLING TOWER LPRC CONDENSING UNIT LLHX CABINET UNIT HEATER LPS		UH UNIT HEATER UL UNDERWRITERS LABORATORY UON UNLESS OTHERWISE NOTED		SINGLE LINE DUCTWORK (EXISTING)		SINGLE DUCT VAV BOX	FOF	FUEL OIL FILL		REFRIGERANT SIGHT GLASS	STRUCTURAL CONDITIONS OR TO AVOID CONFLICTS BE REASONS. CONTRACTOR MAY PRESENT ALL SUCH CHAN BEFORE PROCEEDING WITH SUCH CHANGES. ALL CHAN	ETWEEN THE NEW OR EXISTING BU NGES AS A SUBMITTAL FOR OWNE	BUILDING SERVICES OR FOR OTHER NER'S/ENGINEER'S REVIEW/APPROVAL
ters inch	CONSTANT VOLUME LPSC COLD WATER (POTABLE) LSD	CP LOCAL TEMPERATURE CONTROL PANEL	URV UPBLAST UNIT VENTILATOR -V-	(D)SA	SINGLE LINE DUCTWORK (EXIST. TO BE DEMOLISHED)			——— DW ———	DOMESTIC WATER		TEST PLUG (PRESSURE/TEMPERATURE)	BUILT DRWAINGS FOR RECORDS AS PART OF PROJECT 28. ALL SYMBOLS SHOWN ON SYMBOL LIST ARE NOT NECES	CLOSE-OUT DOCUEMNTATION.	
CWP CWR CWS	CONDENSER WATER PUMP LVG	G LEAVING R LOUVER V	V VALVE VAF VANE-AXIAL FAN	SA D	DOUBLE LINE DUCTWORK (NEW)		SINGLE DUCT VAV BOX WITH ATTENUATOR	CHF	CHEMICAL FEED	—— ———————————————————————————————————	AUTOMATIC AIR VENT	CONTRACTOR SHALL COORDINATE ALL MECHANICAL W 29. ANY CONFLICTS AND SHALL OBTAIN NECESSARY APPRO	ORK WITH BUILDING STRCURE AN	ND ARCHITECTURAL ELEMNTS TO AVC
± — 0000	-D-	-M- VA'	VAV VARIABLE AIR VOLUME VD VOLUME DAMPER VFD VARIABLE FREQUENCY DRIVE	(E)SA D	DOUBLE LINE DUCTWORK (EXISTING)	<u> </u>	ATTENUATOR			— 	MANUAL AIR VENT	FOR ALL PENETRATIONS THROUGH WALL/FLOOR/ROOF 30. AIR MOVING SYSTEMS SUPPLYING AIR IN EXCESS OF 20	THAT ARE REQUIRED FOR MECHA	HANICAL WORK.
D D-1 D-2	DAMPER - AUTOMATIC M OUTDOOR AIR DAMPER M/s RETURN AIR DAMPER MA	METER, SI UNIT METERS PER SECOND(OR METERS/SECOND) MIXED AIR VI VIV	VHA VETERANS HEALTH ADMINISTRATION VI VIBRATION ISOLATOR VIV VARIABLE INLET VANES	Ι Ψ// (ΙΝςΔ///>	DOUBLE LINE DUCTWORK (EXISTING TO BE DEMOLISHED)	H	SINGLE DUCT VAV WITH REHEAT —	VALVES	GATE VALVE - THREADED/FLANGED	<u> </u>	QUICK-COUPLE HOSE CONNECTOR	SHUTOFFS SHALL BE ACCOMPLISHED BY INTERRUPTING SMOKE IN THE MAIN SUPPLY-AIR DUCT.	G THE POWER SOURCE OF AIR-MO	MOVING EQUIPMENT UPON DETECTION
DP DP D-3 DB D-3	RELIEF AIR DAMPER MAT DECIBELS MAU DRY-BULB TEMPERATURE MAV	T MIXED AIR TEMPERATURE VP U MAKE-UP AIR UNIT VPS	VP VACUUM PUMP VPS VARIABLE PRIMARY SYSTEM VR VACUUM (STEAM CONDENSATE) RETURN	 		<u> </u>			GATE VALVE - THREADED/FLANGED GLOBE VALVE - THREADED/FLANGED		WALL THERMOSTAT / TEMP SENSOR	31. CONTRACTOR SHALL PROVIDE TO THE GOVERNMENT UINSTALLATION OR USE OF ADHESIVES, INSULATION, SEA		Y DATA SHEETS (MSD'S) PRIOR TO
DD-1 DD-2 DDC	DESIGN DEVELOPMENT (SUBMISSION1) DESIGN DEVELOPMENT (SUBMISSION2) MB DIRECT DIGITAL CONTROLS MBH	X MAXIMUM VSI MIXING BOX VTF	VSD VARIABLE SPEED DRIVE VTR VENT THRU ROOF VUH VERTICAL UNIT HEATER	0/\	DUCTWORK WITH ACOUSTIC LINING				GATE VALVE WITH 3/4" HOSE ADAPTER		WALL INERIVIOSIAT / IEWI OLINOSIA	32. PLANS SHALL COMPLY WITH THE 2010 INTERNATIONAL I		•
DEG DEG DF DIA		A MINIMUM BRANCH CIRCUIT AMPACITY R MECHANICAL EQUIPMENT ROOM	-W-		DUCT UNDER POSITIVE PRESSURE		AND ATTENUATOR		CHECK VALVE	(S)	SWITCH	33. ALL MSD'S SHALL COMPLY WITH THE OCCUPATIONAL SA 34. CONTRACTOR SHALL PROVIDE RECYCLING OF ITEMS FO EVALUATION, INCLUDING, BUT NOT LIMITED TO THE FOL	OR DEMOLITION AND/OR CONSTRU	RUCTION SUBJECT TO ECONOMIC
to DIW DP DP		MANHOLE W	W WATTS WAG WASTE ANESTHESIA GAS Wb WET-BULB (TEMPERATURE)		SUPPLY DUCT OR FAN DISCHARGE DUCT UNDER NEGATIVE PRESSURE	п_	_	W _r	WYE STRAINER (WITH BALL VALVE & HOSE CONNECTION))	HUMIDISTAT	EVALUATION, INCLUDING, BUT NOT LIMITED TO THE FOL EQUIPMENT, INSULATION, ETC. 35. ALL WASTE AND/OR DEMOLISHED MATERIALS FOUND TO		
DPA DPS DX	DIFFERENTIAL PRESSURE ASSEMBLY MM	MILLIMETER WC	WC WATER COOLED WCCH WATER COOLED CHILLER WCCU WATER COOLED CONDENSING UNIT		RETURN OR OUTSIDE AIR DUCT UNDER NEGATIVE PRESSURE		DUAL DUCT VAV BOX	The state of the s	WYE STRAINER WITH VALVED DRAIN AND QUICK-COUPLE HOSE CONNECTOR	Н	HUMIDIFIER	OR OTHER HARMFUL SUBSTANCES SHALL BE HANDLED 36. ALL INSULATION PRODUCTS FOR HVAC SHALL CONTAIN	AND REMOVED IN ACCORDANCE V	WITH FEDERAL AND STATE LAW FOR
on e half irr		R MEDIUM PRESSURE RETURN (STEAM CONDENSATE) WC	WCCU WATER COOLED CONDENSING UNIT WCHP WATER COOLED HEAT PUMPS WCPU WATER COOLED PACKAGED UNIT WEF WALL EXHAUST FAN	LIP R	EXHAUST AIR RISE IN DUCTWORK (IN DIRECTION OF		_		FLEXIBLE CONNECTION	SD	SMOKE DETECTOR	RECYCLED CONTENT RECOMMENDATION.		
ΕΑ ΕΔΤ	-E- MRI MTD EXHAUST AIR MVD ENTERING AIR TEMPERATURE MZ	D MEAN TEMPERATURE DIFFERENCE WF D MANUAL VOLUME DAMPER WF	WEF WALL EXHAUST FAN WF WATER FILTER WFCV WATER FLOW CONTROL VALVE WFM WATER FLOWMETER	Α	AIR FLOW)	d h	FAN POWERED VAV BOX	7	ANGLE GLOBE VALVE	P	PRESSURE SENSOR	37. NO INSULATION INSTALLED FOR THE PROJECT SHALL B (CFC'S), NOR SHALL CFC'S BE USED IN THE INSTALLATIO	ON OF THE PRODUCT.	
EAT ECC ECC FCU	EVAPORATIVE COOLER ENGINEERING CONTROL CENTER	-N- WG	WFMD WATER FLOW MEASURING DEVICE WG WATER GAGE		DROP IN DUCTWORK (IN DIRECTION OF AIR FLOW)			— 	BUTTERFLY VALVE	FS	FLOW SWITCH	38. ALL INSULATING MATERIALS SHALL HAVE PROPERTIES POLYSTYRENE PRODUCTS SHALL MEET ASTM C578-91.		
ECU EDH EER	ELECTRIC DUCT HEATER NA ENERGY EFFICIENCY RATIO NC	NOT APPLICABLE NOISE CRITERIA	WPD WATER SIDE PRESSURE DROP -Y-	Ţ.	REHEAT COIL		SHUT-OFF VAV BOX (INLET SIZES AVAILABLE: 5",6",8",10",12",14",16")	— 	BALL VALVE	PS	PRESSURE SWITCH	39. CONTRACTOR SHALL SURVEY THE SPACE FOR EXISTING UNFORESEEN CONDITIONS.	3 CONDITIONS AND ALLOW FUR 20	.0% CONTINGENCY BASED ON
4 EGS EGS	EXHAUST FAN NC EXHAUST GRILLE NG EMERGENCY GAS SHUTOFF NGFM	FM NATURAL GAS FLOWMETER	YR YEAR		:==:::::::::::::::::::::::::::::::::::	<u> </u>	AVAILABLE. 3,0,0,10,12,17,10,		MODULATING CONTROL PUTTERELY VALVE	(CO ₂)	CARBON DIOXIDE SENSOR			
EH EJ EMD	ENTERING GLYCOL TEMPERATURE NO EXHAUST HOOD NOAA EXPANSION JOINT END OF MAIN DRIP (STEAM)	ATMOSPHERIC ADMINISTRATION	ı		DUCT TRANSITION		SHUT-OFF VAV BOX WITH HYDRONIC		MODULATING CONTROL BUTTERFLY VALVE	E	-			
emD ENT ER ER C	ENTERING NPLV EXHAUST REGISTER NPSH	LV NON-STANDARD PART LOAD VALUE SH NET POSITIVE SUCTION HEAD	ı			Ч <u>ш</u> ш	HEATING COIL AND OUTLET BOX		TWO POSITION CONTROL VALVE	· Æ				
ERC ERP ESP	ELECTRIC REHEAT COIL NTS ELECTRIC RADIANT PANEL EXTERNAL STATIC PRESSURE	NOT TO SCALE -O-	ı		VANED ELBOW D.	DAMPERS			THREE-WAY MODULATING CONTROL VALVE	E				
three eight ETO ETO ETO ETO		OUTSIDE AIR G OUTSIDE AIR GRILLE	ı		_·	AIVIF LING	- CONTROL ON OVE FIRE DAMPED AND		THREE-WAY TWO POSITION CONTROL VALV	_VE		Sh	HEET INDEX	
¥ ■ BWC EWC	EVAPORATIVE WATER COOLER OAI ENTERING WATER TEMPERATURE OD EXISTING OFM		ı			>	COMBINATION SMOKE/FIRE DAMPER AND ACCESS DOOR		PRESSURE REGULATING VALVE			M001A SYMBOLS, NOTES AND ABBREVIAT	TIONS NONE	
X 6 F.	OR -F- FAHRENHEIT	OPERATING ROOM -P-	ı		RADIUS ELBOW		FIRE DAMPER AND ACCESS DOOR	-\$	PRESSURE SAFETY VALVE			M001A SYMBOLS, NOTES AND ABBREVIAT M002A MECHANICAL SCHEDULES M101A MECHANICAL ADMIN IST FLOOR PL	NONE	011
∞ F&T F/SDPI	FREE AREA PA	PUMP PASCAL	ı		ADIOS ELBOVV	>	SMOKE DAMPER AND ACCESS DOOR		AUTOMATIC BALANCING CONTROL VALVE			M102A MECHANICAL ADMIN ROOF PLAN M501A MECHANICAL DETAILS	1/4 = 1 -0 1/4"=1'-0" NONE	
S FCU FCUC		PUMPED CONDENSATE POUNDS PER CUBIC FOOT (FEET) PRESSURE DROP	ı	J. /		BDD	BACK DRAFT DAMPER	——————————————————————————————————————	WATER BALANCE DEVICE			M501A MECHANICAL DETAILS M502A MECHANICAL DETAILS C701A MECHANICAL CONTROL DIAGRAMS	NONE	
FCUH FD FD	H FAN COIL UNIT HEATING ONLY PDT FORWARD CURVED WHEEL (FAN) PEF FLOOR DRAIN PF	T PRESSURE DIFFERENTIAL TRANSMITTOR PROPELLER (TYPE) EXHAUST FAN PRE-FILTER	ı				AUTOMATIC DAMPER (PNEUMATIC)	⊣ □⊢ √	CIRCUIT SETTER VALVE			U/UIA IVIEUI IAINIOAE OUNTI (OE DII) (O. V) NOINE	
RCHI PACHINA P		C PREHEAT COIL	ı		DUCT FITTING (SEE DETAILS)	<u>M</u> —	AUTOMATIC DAMPER (MOTORIZED)	— - - -	GATE VALVE WITH GLOBE-VALVED BYPASS PLUG VALVE	S				
A B EOL		PARTS PER MILLION PRESSURE REGULATING (VALVE) STATION PRESSURE REGULATING VALVE	ı				VOLUME DAMPER		CONTROL VALVE (CV) - FLOAT-OPERATED	ı				
FOHX FPM FPS	FEET PER MINUTE PSIA FEET PER SECOND PSIG	POUNDS PER SQUARE INCH A POUNDS PER SQUARE INCH – ABSOLUTE G POUNDS PER SQUARE INCH – GAGE	,			,		-	PRESSURE REDUCING VALVE (PRV)					
FPTU FR FRP	J FAN POWERED TERMINAL UNIT PSS FLOOR REGISTER PSV FIBER REINFORCED POLYESTER PTAC	PRIMARY SECONDARY SYSTEM PRESSURE SAFETY VALVE PACKAGED TERMINAL AIR CONDITIONER	J					© M	WATER LEVEL CONTROLLER				FINAL BID	DOCUMENT
LL -0						—, r		(M)	FLOW METER				The state Management	— (
FS FSTAT		CONSULTANTS:				ARCHITECT	Γ/ENGINEERS:		Drawing Title		, NOTES AND	Project Title VA PA BLDG 6	Project Number 640-13-121P	Office of
1 1					PROFESSIONAL A	HILLIARD ≥				·	VIATIONS	ADMINISTRATIVE	Building Number	Construction
					PASAD V. NO. 17		HILLIARD ARCHITECT					EXPANSION	6	and Facilities
							251 Post Street, Suite	4 <i>620</i>	Annroyed: F.	Project Director		1 Location	□ Drowing Number	" " C C C C C C C C C C C C C C C C C C
5 &					No. M35846 Exp.Mar.31,2014	LISHE IN THE PROPERTY OF THE P	San Francisco, CA 94 Tel 415 989 6400, Fax	<i>4108-5017</i>	Approved: F	Project Director		VAPAHCS, PALO ALTO CAMPUS 3801 MIRANDA AVE. PALO ALTO, CA 94304	Drawing Number MO01 A	Management
						JE GOING GREEN	San Francisco, CA 94 Tel 415 989 6400, Fax www.HilliardArchited	4108-5017 x 415 989 3056	Approved: F	Project Director		· 11	Drawing Number MOO1A Dwg. of	Department of

MARK LOCATION	AREA				MIN. OUTSIDE AIR EXT STATIC PRESSURE		EYT STATIC						COOLING C	CAPACITY	•							HEATING CA	APACITY					E	ELECTRICAL DA	ATA						
	AND/OR BLDG	TYPE	TOTAL SUPPLY AIR FLOW				MIN TOTA	MIN TOTAL CAPACITY MIN SENS CAPACITY		MIN SEER	Dh	EAT Db Wb		OSA DES	IGN TEMP	COMP	MIN. HEAT C	CAPACITY	EAT [DB	LAT	Db	AIR FILTER MARK NO	INDOOF	R FAN	MCA	PHASE	VOLT	SUPPLEMENTAL HEAT		REMARKS					
		SERVED		CFM [L/s]	CFM	[L/s	s] IN	l [Pa]	MBH	[kW]	MBH	[kW]	, with OLLIN	°F	[°C]	°F	[°C]	°F	[°C]	KW	MBH	KW	°F	[°C]	°F	[°C]		HP	[W]		117.02	1021	KW	PHASE	VOLT	
6-RTU-1	ROOF	ADMIN.	PACKAGED ROOFTOP	1600 [760]	240	[110	0] 1.	5 [380]	480	[1600]	400	[120]	14.5	80	[27]	67	[19]	[92]	[33]	[4]	[25]	[7]	80	[27]	80	[27]	6-PF-1	5	[3700]	29.4	3	460	12	3	460	AS MANUFACTURED BY TRA
OTES:							!	<u>'</u>	<u>.</u>	<u>.</u>	•	•					·!	<u>!</u>	<u>.</u> !	•	<u> </u>		<u> </u>				!	<u>,</u>		<u>.</u> !			ļ.		<u>.</u>	
PACKAGED ELE	CTRIC ROOFTOP HE	AT PUMP UNIT W	ITH SIDE DISCHARG	E CONFIGURATION AND 10	00% O.A. MOD	ULATING E	CONOMIZER C	CONTROL WITH 1	00% BAROMETR	RIC RELIEF DAM	IPER.																									
PROVIDE HIGH I	FFICIENCY UNIT WI	TH R-410A REFRIC	GERANT.																																	
PROVIDE BELT I	RIVE INDOOR FAN I	MOTOR.																																		
PROVIDE UNIT V	/ITH FACTORY MOU	NTED DISCONNE	CT SWITCH.																																	
UNIT OPERATIN	WEIGHT INCLUDES	S ALL ACCESSOR	IES AND OPTIONS.																																	
UNIT CAPACITY	SHALL BE RATED FO	OR RETURN AIR O	F 80° F DB, 67° F WI	3 AND AT 95° F AMBIENT.																																
UNITS SHALL BE	INSTALLED ON SPF	RING ISOLATION C	CURBS WITH 2" DEFL	ECTION. SEE DETAIL 4/MS	502A FOR MO	UNTING.																														
DDOV/IDE WITH		MAY FILTEDO DE	ZEC AND OLIANITITIE	S OF FILTERS SHALL BE A				AOTUDED																												

9. PROVIDE SUPPLY DUCT MOUNTED SMOKE DETECTOR FOR AUTO-SHUT OFF OF THE UNIT.

one eighth inch = one foot

0 4 8 16

VA FORM 08-6231

				RELI	IEF HOO	SCHEDUL	<u>.E</u>					
MARK	LOCATION	SYSTEM AND/OR SERVICE	TYPE	APPLICATION	THR	OAT SIZE	AIR F	FLOW	APD IN [Pa]		DAMPER TYPE	REMARKS
					IN	[mm]	CFM	[L/s]			1	
6-RH-1	ROOF	ADMIN. RELIEF	GRAVITY	RELIEF	24 x 24	[600 x 600]	1600	[760]	0.1	[25]	SEE NOTE 2	AS MANUFACTURED BY GREENHEC
6-RH-2	ROOF	BASEMENT CRAWL SPACE	GRAVITY	VENTILATION	24 x 24	[600 x 600]	-	-	-	-	SEE NOTE 2	AS MANUFACTURED BY GREENHEC
6-RH-3	ROOF	BASEMENT CRAWL SPACE	GRAVITY	VENTILATION	24 x 24	[600 x 600]	-	-	-	-	SEE NOTE 2	AS MANUFACTURED BY GREENHEC
NOTES:	•		•								•	
1. PROVIDE	WITH, BIRD SCREE	N, AND 12" HIGH FACTORY ROOF CURE	3.									
2. PROVIDE	ON/OFF LOW LEAKA	AGE OPPOSED BLADE MOTORIZED DA	MPER IN THE RELIE	EF AIR DUCTWORK.								
	AIL 8/M502A FOR MC	NINTING										

							AIR DE	VICE SCHED	ULE (SU	PPLY)							
	TYPE		AIR I	FLOW		- MAX APD			PANEL	_/FRAME SIZE	NECK SIZE						
MARK		MIN		MAX		T IVIAX	APD	MOUNTING	INI se INI	[mana v mana]	INI	[mm]	NC	DAMPER	FINISH	REMARKS	
		CFM	[L/s]	CFM	[L/s]	IN WG	[Pa]		IN x IN	[mm x mm]	IN	[mm]					
SD-12	LOUVERED FACE	70	[33]	280	[130]	0.100	[25]	CEILING	24 x 24	[600 x 600]	8 ø	[203 ø]	23	NONE	WHITE		
SD-13	LOUVERED FACE	110	[52]	380	[180]	0.090	[23]	CEILING	24 x 24	[600 x 600]	10 ø	[254 ø]	22	NONE	WHITE		
NOTES				<u> </u>												1	
1. SEE FLO	OOR PLAN FOR THRO	W PATTE	RN.														

2. SEE DETAIL FOR DAMPER IN BRANCH DUCT SERVING EACH DIFFUSER.

3. PROVIDE SQUARE TO ROUND ADAPTER.

PROVIDE SQUARE TO ROUND ADAPTER.

2 8 9

						ΛIE		E COUEDIII E	DETUD	AL / EVUALIST	-1					
	AIR DEVICE SCHEDULE (RETURN / EXHAUST)															Τ
				LOW		MAX	APD		PANEL/	FRAME SIZE	NE(CK SIZE				1
MARK	TYPE	MIN		MAX				MOUNTING	MOUNTING				 	DAMPER	FINISH	REMARKS
		CFM	[L/s]	CFM	[L/s]	IN WG	[Pa]		IN x IN	[mm x mm]	IN x IN	[mm x mm]				
RG-04	EGGCRATE	1125	[530]	2625	[1200]	0.073	18.000	CEILING	24 x 24	[600 x 600]	24 x 24	[600 x 600]	20	NONE	WHITE	
EG-01	EGGCRATE	1125	[530]	2625	[1200]	0.073	18.000	CEILING	24 x 24	[600 x 600]	24 x 24	[600 x 600]	20	NONE	WHITE	
NOTE																

FINAL BID DOCUMENTS

	CONSULTANTS:		ARCHITECT/ENG	GINEERS:	Drawing Title	Project Title VA PA BLDG 6 ADMINISTRATIVE EXPANSION			Project Number 640-13-121P	Office of
		PROFESSIONAL TU	88 HILLIARD A	HILLIARD ARCHITECTS, INC	MECHANICAL SCHEDULES				Building Number 6	Construction and Facilities
		No. M35846 Exp.Mar.31,2014	BLISHED	251 Post Street, Suite 620 San Francisco, CA 94108-5017 Tel 415 989 6400, Fax 415 989 3056	Approved: Project Director	Location VAPAHCS, PALO ALTO CAMPUS 3801 MIRANDA AVE. PALO ALTO, CA		, CA 94304	Drawing Number MO02A	Management
Revisions: Date		OF CALIFORNIA	≦ GOING GREEN	www.HilliardArchitects.com		Date 04.17.2014	SHG	Drawn Author	Dwg. of	Department of Veterans Affairs









