HVAC PIPING/TUBING MATERIAL, JOINTS & FITTINGS

SYSTEM	PIPE SIZE	CONSTRUCTION	PIPING	FITTINGS	UNIONS	FLANGES
MAKE UP WATER	2" AND SMALLER	SOLDER JOINT CONSTRUCTION WITH THREADED ADAPTERS AS REQUIRED. 95-5 TIN/ANTIMONY SOLDER.	COPPER, TYPE L, HARD DRAWN, ANSI H23.1, ASTM B88.	CAST BRONZE OR WROUGHT COPPER, SOLDER ENDS, ANSI B16.9 OR ANSI B16.22.	BRONZE SOLDER ENDS, GROUND JOINTS, ANSI B16.19 OR ANSI B16.22.	USE UNIONS
	2 1/2" AND LARGER	SOLDER JOINT CONSTRUCTION WITH THREADED ADAPTERS AS REQUIRED. 95-5 TIN/ANTIMONY SOLDER.	COPPER, TYPE L, HARD DRAWN, ANSI H23.1, ASTM B88.	CAST BRONZE OR WROUGHT COPPER, SOLDER ENDS, ANSI B16.9 OR ANSI B16.22.	BRONZE SOLDER ENDS, GROUND JOINTS, ANSI B16.19 OR ANSI B16.22.	USE UNIONS
CHILLED WATER, GLYCOL AND COOLING SUPPLY AND RETURN, VENTS AND DRAINS	2" AND SMALLER	SOLDER JOINT CONSTRUCTION WITH THREADED ADAPTERS AS REQUIRED. 95-5 TIN/ANTIMONY SOLDER.	COPPER, TYPE L, HARD DRAWN, ANSI H23.1, ASTM B88.	CAST BRONZE OR WROUGHT COPPER, SOLDER ENDS, ANSI B16.9 OR ANSI B16.22.	BRONZE SOLDER ENDS, GROUND JOINTS, ANSI B16.19 OR ANSI B16.22.	CAST BRONZE, CLASS 150, SOLDER TYPE, ANSI B16.24.
	2 1/2" AND LARGER	BUTT WELDED CONSTRUCTION WITH FLANGED CONNECTIONS TO VALVES AND EQUIPMENT AS REQUIRED.	BLACK STEEL, SCHEDULE 40, SEAMLESS, ASTM A53, GRADE B.	STEEL, CLASS 150, BUTT WELD ENDS, ANSI B16.9, ASTM A234.	STEEL, CLASS 150, WELD TYPE, ANSI B16.5, ASTM 181, GRADE 1,	STEEL, CLASS 150, WELD TYPE, ANSI B16.5, ASTM A234, GRADE WPA.
COOLING COIL CONDENSATE DRAINS	2" AND SMALLER	SOLDER JOINT CONSTRUCTION WITH THREADED ADAPTERS AS REQUIRED. 95-5 TIN/ANTIMONY SOLDER.	COPPER, TYPE L, HARD DRAWN, ANSI H23.1, ASTM B88.	CAST BRONZE OR WROUGHT COPPER, SOLDER ENDS, ANSI B16.9 OR ANSI B16.22.	BRONZE SOLDER ENDS, GROUND JOINTS, ANSI B16.19 OR ANSI B16.22.	USE UNIONS
	2 1/2" AND LARGER	SOLDER JOINT CONSTRUCTION WITH THREADED ADAPTERS AS REQUIRED. 95-5 TIN/ANTIMONY SOLDER.	COPPER, TYPE L, HARD DRAWN, ANSI H23.1, ASTM B88.	CAST BRONZE OR WROUGHT COPPER, SOLDER ENDS, ANSI B16.9 OR ANSI B16.22.	BRONZE SOLDER ENDS, GROUND JOINTS, ANSI B16.19 OR ANSI B16.22.	USE UNIONS
REFRIGERANT SUCTION, HOT GAS AND LIQUID PIPING AND TUBING	2" AND SMALLER	BRAZED JOINT CONSTRUCTION, AWS A5.8 FILLER METAL.	COPPER, ACR TUBING, STRAIGHT LENGTHS, DRAWN H58, ASTM B 280.	WROUGHT COPPER, BRAZED ENDS, ANSI B16.22.	WROUGHT COPPER, BRAZED ENDS, ANSI B16.22.	USE UNIONS
	2 1/2" AND LARGER	BRAZED JOINT CONSTRUCTION, AWS A5.8 FILLER METAL.	COPPER, ACR TUBING, STRAIGHT LENGTHS, DRAWN H58, ASTM B 280.	WROUGHT COPPER, BRAZED ENDS, ANSI B16.22.	WROUGHT COPPER, BRAZED ENDS, ANSI B16.22.	USE UNIONS

HVAC PIPING/TUBING INSULATION

SYSTEM	LOCATION	PIPE SIZE	CELLULAR GLASS	FLEXIBLE ELASTOMERIC	MINERAL-FIBER TYPE I	CALCIUM SILICATE
CONDENSATE & EQUIPMENT DRAIN, BELOW 60°F	INDOOR	ALL	1-1/2"	-	1-1/2"	-
	OUTDOOR ABOVE GRADE	ALL	1-1/2"	-	-	-
CHILLED WATER, GLYCOL	INDOOR	1-1/2" & SMALLER	1-1/2"	-	1-1/2"	-
		2" & LARGER	2"	-	2"	-
	OUTDOOR ABOVE GRADE	ALL	3"	-	-	-
REFRIGERANT (ALL) SUCTION, HOT GAS, VAPOR, & LIQUID PIPING	INDOOR	ALL	1-1/2"	1-1/2"	1-1/2"	-
	OUTDOOR ABOVE GRADE	ALL	1-1/2"	1-1/2"	-	-
REFRIGERANT (ALL) SUCTION, HOT GAS, VAPOR, & LIQUID FLEXIBLE TUBING	INDOOR	ALL	-	1-1/2"	-	-
	OUTDOOR ABOVE GRADE	ALL	-	1-1/2"	-	-

BLANKS (-) INDICATE INSULATION TYPE SHALL NOT BE USED.

THICKNESS BASED ON INSULATION HAVING A CONDUCTIVITY (K) NOT EXCEEDING 0.27 BTU PER INCH/Hr FT^2• °F

1. ALL EXPOSED INDOOR PIPING/TUBING AND FITTINGS WITHIN OCCUPIED SPACES, CORRIDORS, MECHANICAL ROOMS AND OTHER NON-CONCEALED LOCATIONS SHALL BE FITTED WITH PVC FITTING COVERS AND PVC PIPE COVERS FROM THE FLOOR LEVEL TO 12' ABOVE THE FINISHED FLOORS, PLATFORMS, AND MEZZANINES. PVC FITTING AND PIPE COVERS SHALL BE 25/50 FLAME AND SMOKE SPREAD RATED, COVERS AND JACKETING COLOR TO BE SELECTED BY ARCHITECT. PROVIDE TEMPLATE OF JACKET COLORS FOR THE ARCHITECT'S REVIEW.
2. ALL ELBOWS; CONCEALED OR EXPOSED, SHALL BE INSULATED WITH PRE-MOLDED, FACTORY FORMED FIBROUS GLASS WITH 3.5 PCF MINIMUM DENSITY AS MANUFACTURED BY HAMFAB OR APPROVED EQUAL. ALL ELBOWS; CONCEALED OR EXPOSED, SHALL BE COVERED WITH PVC FITTING COVERS. PVC FITTING COVERS SHALL BE 25/50 FLAME AND SMOKE SPREAD RATED, COVER COLOR TO BE SELECTED BY ARCHITECT. PROVIDE TEMPLATE OF JACKET COLORS FOR THE ARCHITECT'S REVIEW.
3. DIAPER AND LOOSE FILL STYLE INSULATION ON PIPE FITTINGS IS NOT ACCEPTABLE. ELBOWS WITHOUT PVC COVERS ARE NOT ACCEPTABLE.
4. INSULATE ALL COILS MOUNTED IN DUCTWORK OR TERMINAL BOXES. INSULATION THICKNESS SHALL BE EQUAL TO THE ASSOCIATED DUCT INSULATION THICKNESS.
5. ALL OUTDOOR PIPING/TUBING SHALL BE FITTED WITH A PRE-MANUFACTURED ALUMINUM JACKET PRODUCT. 0.024" ALUMINUM JACKET LOCK-ON OR SLIP-ON TYPE JACKETING TO BE COVERED WITH ACRYLIC COATING ON THE OUTER SURFACE AND A BAKED EPOXY MOISTURE BARRIER ON THE INNER SURFACE. MANUFACTURER SHALL BE SIMILAR TO CHILDERS PRODUCTS, DIVISION OF ITW; METAL JACKETING SYSTEMS. ALL EXPOSED JOINTS IN THE JACKET PRODUCT SHALL BE INSTALLED IN SUCH A WAY AS TO PREVENT THE INFILTRATION OF MOISTURE AND WATER.

HVAC VIBRATION-CONTROL

EQUIPMENT	BASE	ISOLATOR*	DEFLECTION
CONDENSING UNITS (GRADE AND ROOF MOUNTED)	24" HIGH EQUIPMENT RAILS	NP	0.2"
FAN COIL UNITS, CEILING MOUNTED	-	HSN	1.2"

REMARKS:
1. (NP) - NEOPRENE PAD, (DNP) - DOUBLE NEOPRENE PAD, (FNC) - FLOOR NEOPRENE RESTRAINED MOUNTS, (FSN) - FLOOR SPRING AND NEOPRENE SPRING ISOLATOR, (FSNTL) - FLOOR SPRING AND NEOPRENE TRAVEL LIMITED RESTAINED SPRING ISOLATOR, (HN) - NEOPRENE HANGER, (HSN) - SPRING AND NEOPRENE HANGER, (RC) - ROOF CURB, (BSF) - BASE, STEEL FRAME, (BIB) - BASE, INERTIA BASE, (FPC) - FLEXIBLE PIPE CONNECTIONS, (SRC) - SEISMIC ROOF CURB.
2. SEISMIC ANCHORS, SUPPORTS AND BRACING EQUIPMENT SHALL BE PROVIDED. THE DESIGN OF ALL COMPONENTS SHALL BE SUBMITTED SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF THE PROJECT INDICATING ALL NECESSARY COMPONENT CUT SHEETS, PLAN LOCATIONS AND CALCULATIONS FOR A COMPLETE SYSTEM.
3. PROVIDE SUPPLEMENTAL STEEL WITHIN THE ROOF CURB TO SUPPORT DUCTWORK INDEPENDENT FROM THE ROOF CURB.

* IN ADDITION TO ANY INTERNAL VIBRATION ISOLATION.
** SYSTEM SHALL BE DESIGNED TO BE 90% EFFICIENT.

PLUMBING INSULATION SCHEDULE

SYSTEM	PIPE SIZE	PIPE INSULATION TYPE	PIPE INSULATION THICKNESS	FITTINGS, VALVES, FLANGES - INSULATION TYPE	REMARKS
DOMESTIC COLD WATER	ALL	MINERAL FIBER, ASJ, SSL	1"	MOLDED, PRE-FORMED MINERAL FIBER PVC JACKET	TYPE I

NOTE 1: FIBERGLASS INSULATION: THERMAL CONDUCTIVITY .22 TO .28 BTU x IN./H x FT x °F W/ 100°F MEAN TEMP.
THICKNESS BASED ON ASHRAE 90.1, 2007, TABLE 6.8.3

PACKAGED COMPUTER ROOM AIR CONDITIONING UNITS

UNIT NO	LOCATION	AREA SERVED	ROOM CONDITIONS TEMP. °F DB	WB	R.H.	DX COOLING COIL CAPACITY (MBH) TOTAL	SENS	FACE AREA	FAN DATA CFM	EXT. S.P.	H.P.	VOLT	Ø	ELECTRIC REHEAT COIL CAPACITY MBH	KW	STEPS	VOLT	Ø	HUMIDIFIER DATA TYPE	CAPACITY LBS/HR	FILTER DATA	MAKE/MODEL	REMARKS
CRAC-2	MDF ROOM	MDF ROOM	75°F	61°F	45%	32.5	28.4	3.1 FT^2	1250	-	1/2	460	3	27	7.9	SCR	460	3	STEAM GENERATING	4.3		LIEBERT MMD36E	EXISTING NOTED FOR REFERENCE ONLY
CRAC-3	MDF ROOM	MDF ROOM	70°F	61°F	45%	152.3	118.9	12.2 FT^2	4500	0.5	3.0	460	3	51.2	15.0	3	460	3	STEAM GENERATING	10.0	MERV 11	DATA AIRE DTAU-1334	
CRAC-4	MDF ROOM	MDF ROOM	70°F	61°F	45%	152.3	118.9	12.2 FT^2	4500	0.5	3.0	460	3	51.2	15.0	3	460	3	STEAM GENERATING	10.0	MERV 11	DATA AIRE DTAU-1334	

NOTES:
1. ALL INDOOR UNITS SHALL BE FURNISHED WITH ELECTRIC REHEAT COIL WITH MINIMUM 3 STAGES, UNIT MOUNTED SMOKE DETECTOR, STAINLESS STEEL DRAIN PAN, CONDENSATE LIFT PUMP AND STEAM GENERATING HUMIDIFIER.
2. ALL INDOOR UNITS SHALL BE FURNISHED WITH 2" FILTER. PROVIDE 1 SPARE SET OF FILTERS (TOTAL NUMBER OF FILTER SETS = 2).
3. ALL CONDENSING UNITS SHALL BE FURNISHED WITH ALL REQUIREMENTS FOR LOW AMBIENT OPERATION AT 0°F.
4. ALL INDOOR UNITS SHALL BE FURNISHED WITH AIR DISTRIBUTION PLENUM AND CONDENSATE PUMP.
5. THE COMPRESSORS SHALL BE HERMETIC SCROLL AND UTILIZE R-407C OR R-410A REFRIGERANT. R-22 REFRIGERANT IS NOT ACCEPTABLE.
6. PROVIDE TROUBLE ALARM OUTPUT FROM EACH UNIT TO THE BASE BUILDING BMS.

AIR COOLED CONDENSER UNITS

UNIT NO	LOCATION	CAP MBH	REFR	COMPRESSORS TYPE	NO	STEP	CONDENSER FAN	NO	ESP	HP	RPM	SCT	AMB	ELECTRICAL VOLT	PH	FLA	WSA	MOP	MAKE/MODEL	REMARKS
ACCU-6	GRADE	180	R-410A				PROP.	2	-	0.75	1075	-	95°F	460	3	4.6		20.0	DATA AIRE DARC-1534	CRAC-1 INDOOR UNIT
ACCU-7	GRADE	180	R-410A				PROP.	2	-	0.75	1075	-	95°F	460	3	4.6		20.0	DATA AIRE DARC-1534	CRAC-2 INDOOR UNIT

NOTES:
1. CONTRACTOR SHALL PROVIDE UNIT MOUNTED DISCONNECT.
2. CONDENSING UNIT SHALL BE INTERLOCKED WITH INDOOR CRAC UNIT.

FAN COIL UNITS

UNIT NO	CFM	EXT SP	COOLING COIL MBH	EAT	LAT	EWT	LWT	GPM	PD	HEATING COIL MBH	EAT	LAT	EWT	LWT	GPM	PD	ELECTRICAL HP	VLT	PH	RPM	MAKE/MODEL	REMARKS
FCU-9	875	0.05	25.5	76°F	55.0°F	42°F	54°F	4.3	3.4FT								1/12 HP	115	1	-	MCQUAY/FCHC110	AMP RACK & SOUND STORAGE - 030G

NOTES:
1. PROVIDE SUPPLY AIR BAR GRILLES, EXTENDED END POCKET AND BACK INLET FOR ALL SUSPENDED FAN COIL UNITS.
2. COORDINATE FAN COIL UNIT LOCATIONS WITH EXISTING AV EQUIPMENT LOCATED WITHIN STORAGE ROOM. FAN COIL UNIT SHALL NOT BE LOCATED ABOVE AV RACK.
3. PROVIDE STANDARD COLOR CHART FOR COLOR SELECTION BY THE UNIVERSITY.
4. PROVIDE AUXILIARY DRAIN PAN BELOW VALVE CONNECTIONS FOR ALL FAN COIL UNITS.
5. PROVIDE LEAK DETECTION IN AUXILIARY DRAIN PAN.

BACKFLOW PREVENTER SCHEDULE

UNIT TAG	SIZE	LOCATION	SERVICE	BODY MATERIAL	TEMPERATURE RANGE	MAX. WORKING PRESSURE	MANUFACTURER MODEL	REMARKS	QUANTITY
BFP-1	3/4"	MECHANICAL EQUIPMENT ROOM	HUMIDIFIER MAKE-UP WATER	BRONZE	33°F MIN 110°F MAX	175	WATTS SERIES 909M1QTS WITH 909-AG-F AIR GAP FITTING	PROVIDE STRAINER, AIR GAP FITTING AND PIPE TO FLOOR DRAIN	1

NO.	DATE	REVISION

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CLIENT

WESTERN CONNECTICUT STATE UNIVERSITY
VISIUAL AND PERFORMING ARTS CENTER
DANBURY, CONNECTICUT

PROJECT

SERVER ROOM COOLING

TITLE

SCHEDULES - MECHANICAL

DRAWN BY:	FMD	DRAWING
CHECKED BY:	KR	M2.01
SCALE:	NO SCALE	
DATE:	08/01/14	

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