

AIR HANDLING UNIT SCHEDULE

PK. NO.	MANUFACTURER # MODEL #	OSA	SUPPLY FANS (2 TOTAL)					RETURN FANS (2 TOTAL)					ELECTRICAL (SINGLE CIRCUIT)					COOLING COIL								REMARKS		
			CFM	HP (42)	BHP	RPM	ESP (ft.)	CFM	HP (42)	BHP	RPM	ESP (ft.)	VOLTS	FREQ	PHASE	TERMINALS	TOTAL MBH	SENS MBH	EAT (°F)	LAT (°F)	ENT/LMT (°F)	FLOW	FLUID FO	COIL CONN.	ROWS		FINES/ FOOT	WEIGHT (LBS)
AH-9	TRANE #PCC SIZE 17 (CSAA)	650	10300	7.4	11.1	2070	2.0	10300	7.4	5.5	1650	1.0	460	1.3	160	3(4)	35	401	263	80/61	59/54	46/55	80	GPM	4	196	3620	SEE NOTES

NOTES:

- PROVIDE ROOFTOP UNIT WITH LEFT HAND RETURN (FACING SUPPLY END), RIGHT HAND OSA, LEFT HAND RELIEF, END SUPPLY. MOUNT ON EXISTING PLATFORMS (SEE STRUCTURAL FOR SUPPORT # ANCHORAGE). ARRANGEMENT SHALL BE: RETURN FAN, MIXING BOX, PREFILTER, COOLING COIL, SUPPLY FAN.
- PROVIDE WITH DIRECT DRIVE VARIABLE SPEED FANS WITH 0-100% SPEED INPUT. SEE SHEET 11-A FOR CONTROLS
- ELECTRICAL TO PROVIDE 120V POWER FOR CONTROLS 460V/3PH POWER FOR FANS. FAN POWER TO BE PROVIDED FROM THE FACTORY AS SINGLE POINT CONNECTION
- PROVIDE WITH MERV 13 FILTERS UPSTREAM OF THE COOLING COIL.
- PROVIDE SUPPLY AIR SMOKE DETECTOR SHUTOFF IN COMPLIANCE WITH 2019 CMC 608.0.
- PROVIDE ECONOMIZING CONTROLS TO MEET 2019 CALIFORNIA ENERGY CODE REQUIREMENTS (SEE SECTIONS 120.2(1) AND 140.4(e)). NOTE: COMPUTER ROOM DOES NOT EXCEED 20 W/5F.

TERMINAL BOX SCHEDULE

TAG	MANUFACTURER # MODEL #	DUCT SYSTEM	INLET SIZE	DESIGN CFM	MIN. CFM	A.P.D. AT DESIGN CFM (H.C.)	REHEAT COIL								CTRL VALVE MAX dp/Cv	WEIGHT
							EAT (DEG. F)	LAT (DEG. F)	ENT (DEG. F)	LMT (DEG. F)	ROWS	GPM	MBH	MAX. W.P.D.		
TB-1	TRANE VCNF	SA	10"φ	630	190	< 0.3"	55	90	180	150	1	0.5	7.2	2 FT	5 PSI / 0.22	< 50 LBS
TB-2	TRANE VCNF	SA	10"φ	630	190	< 0.3"	55	90	180	150	1	0.5	7.2	2 FT	5 PSI / 0.22	< 50 LBS
TB-3	EXISTING BOX*	SA	24"x16"	7860	2360	-	-	-	-	-	-	-	-	-	-	-
TB-4	TRANE VCNF	SA	10"φ	1190	360	< 0.3"	55	90	180	150	1	0.7	13.6	2 FT	5 PSI / 0.31	< 50 LBS

TRANE SINGLE DUCT CAV BOX WITH HHW REHEAT COIL (AS APPLICABLE), 1" FOIL FACED INSULATION, FIELD INSTALLED CONTROLS BY CONTROLS VENDOR, CONNECT TO EXISTING BDC SYSTEM CONTROL POWER. TERMINAL BOX SHALL BE DUCT SUPPORTED (NOT TO EXCEED 75 LBS). PROVIDE COIL CONNECTION PIPING, INCLUDING 2-WAY MODULATING VALVE, STRAINER, BRAIDED HOSE CONNECTIONS, SHUTOFF VALVES, CIRCUIT SETTER, AND TEST PORTS. SEE 3/11-5. PROVIDE MINIMUM 3 DIAMETERS STRAIGHT DUCT LEADING TO INLET. CONCENTRIC ROUND TRANSITIONS WITH MAX 20° TAPER ANGLE ARE ACCEPTABLE.

* NOTE: TB-3 HAS AN EXISTING HEATING COIL UPSTREAM. PERFORMANCE AND WATER BALANCE SHALL REMAIN UNCHANGED.

MECHANICAL GENERAL NOTES

- SCOPE: PROVIDE NEW COMPLETE HVAC SYSTEM, INCLUDING MECHANICAL EQUIPMENT # DUCTWORK AS GENERALLY DELINEATED ON THE DRAWINGS. EQUIPMENT SHALL COMPLY WITH TITLE 24 CALIFORNIA CODE OF REGULATIONS.
- ALL WORK MATERIAL AND EQUIPMENT SHALL BE FURNISHED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY HAVING JURISDICTION. NOTHING IN THESE PLANS SHALL BE CONSTRUED TO PERMIT THE INSTALLATION OF WORK MATERIAL OR EQUIPMENT NOT CONFORMING TO THESE OR OTHER CODES APPLICABLE TO THIS PROJECT.
 - A. 2019 CALIFORNIA ADMINISTRATIVE CODE (CAC) PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
 - B. 2019 CALIFORNIA BUILDING CODE (CBC) PART 2, TITLE 24, CCR BASED ON THE 2018 INTERNATIONAL BUILDING CODE (IBC)
 - C. 2019 CALIFORNIA ELECTRICAL CODE (CEC) PART 3, TITLE 24, CCR BASED ON THE 2018 NATIONAL ELECTRICAL CODE (NEC)
 - D. 2019 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24, CCR BASED ON THE 2018 UNIFORM MECHANICAL CODE (UMC)
 - E. 2019 CALIFORNIA PLUMBING CODE (CPC) PART 5, TITLE 24, CCR BASED ON THE 2018 UNIFORM PLUMBING CODE (UPC)
 - F. 2019 CALIFORNIA ENERGY CODE (CEC) PART 6, TITLE 24 CCR
 - G. 2019 CALIFORNIA FIRE CODE (CFC) PART 9, TITLE 24, CCR BASED ON THE 2018 INTERNATIONAL FIRE CODE (IFC)
 - H. 2019 CALIFORNIA GREEN BUILDING STANDARDS (CGBCS) PART II, TITLE 24, CCR
- WORKMANSHIP: ALL WORKMANSHIP SHALL BE DONE IN A NEAT AND ORDERLY MANNER ACCORDING TO THE BEST TRADE PRACTICE BY THOSE SKILLED IN THE PARTICULAR TRADE. EQUIPMENT, DUCTS, GRILLES, ETC., SHALL BE PLUMB, LEVEL, SQUARE OR CENTERED ETC., TO GIVE A NEAT AND PLEASING APPEARANCE. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- AVAILABLE POWER: THE MECHANICAL CONTRACTOR SHALL CONFIRM ALL SYSTEMS VOLTAGES BEFORE BIDDING OR ORDERING EQUIPMENT, AND SHALL ALLOW FOR BUCK & BOOST TRANSFORMERS IF REQUIRED.
- AIR BALANCE: THE AIR DISTRIBUTION SYSTEM SHALL BE BALANCED TO DELIVER SPECIFIED AIR QUANTITIES FOLLOWING THE PROCEDURES OF THE LATEST EDITION OF THE SPKACNA PUBLICATION PROCEDURAL STANDARDS FOR TESTING ADJUSTING & BALANCING OF ENVIRONMENTAL SYSTEMS. CONTRACTOR SHALL PROVIDE ACCESSIBLE & ADJUSTABLE VOLUME DAMPERS AS REQUIRED TO BALANCE THE SYSTEMS AND MAINTAIN A NOISE CRITERIA LEVEL NOT TO EXCEED 30. THE AIR BALANCE TECHNICIAN SHALL BE RESPONSIBLE TO MODIFY ALL SUPPLY, RETURN, AND EXHAUST FAN SHEAVES & VFD OUTPUT FREQUENCY LIMITS AS APPLICABLE SUCH THAT THE DESIGN AIR FLOWS ARE MET. ALL SUPPLY FANS CONTROLLED FOR FILTER LOADING SHALL SIMILARLY BE MODIFIED TO ENSURE THE FULL RANGE OF MOTOR POWER IS AVAILABLE TO THE CONTROL SYSTEM. RATED MAXIMUM FAN SPEED SHALL NOT BE EXCEEDED.
- PERMITS AND UTILITY SERVICE FEES: CONTRACTOR TO ARRANGE AND PAY FOR ALL PERMITS, INSPECTIONS AND SERVICE CHARGES REQUIRED IN THE INSTALLATION OF THE WORK.
- EXISTING INFORMATION: LOCATION, SIZE, MATERIAL, ETC. OF EXISTING SYSTEMS, IS PROVIDED FROM SOURCES DEEMED TO BE RELIABLE BUT IS NOT GUARANTEED. CONTRACTOR SHALL VERIFY ALL DATA BEFORE PROCEEDING WITH ANY WORK. NO EXTRA COST WILL BE ALLOWED FOR CONDITIONS NOT AS SHOWN.
- ACCURACY: PLANS ARE DIAGRAMMATIC. CONTRACTOR SHALL CONFIRM ALL DIMENSIONS AND LOCATIONS OF AC UNITS, EXHAUST FANS, WALLS, PARTITIONS ETC., AGAINST ARCHITECTURAL AND STRUCTURAL DESIGN PLANS FOR LOCATION CONSISTENCY & ACCURACY PRIOR TO COMMENCING WITH ANY WORK.
- PAINTING: PAINT ALL VISIBLE INTERIOR PORTIONS OF TERMINAL DEVICES & CANS WITH FLAT BLACK ENAMEL PAINT.
- SIZES: DUCTWORK SIZES ON PLANS ARE INSIDE NET FREE AREA.
- MECHANICAL EQUIPMENT: ALL EQUIPMENT SHALL BE LISTED BY AN APPROVED TESTING AGENCY AND INSTALLED IN ACCORDANCE WITH ITS INSTALLATION INSTRUCTIONS AND LISTING.

DEMOLITION NOTES

- THE CONTRACTOR SHALL VISIT THE PROJECT SITE AND MAKE HIMSELF AWARE OF ALL EXISTING CONDITIONS WHICH CAN BE OBSERVED. ADDITIONAL COSTS WILL NOT BE ALLOWED FOR CORRECTION OF ITEMS WHICH CAN BE OBSERVED AND THEREFORE SHOULD BE INCLUDED IN HIS BID. THE CONTRACTOR IS RESPONSIBLE FOR ALL DEMOLITION WORK REQUIRED TO COMPLETE THIS PROPOSED PROJECT.
- THE NOTES AND DRAWINGS CONTAINED ON THIS SHEET DESCRIBE IN A GENERAL SENSE THE EXTENT OF ITEMS TO BE MODIFIED, REMOVED OR INSTALLED. THIS DESCRIPTION DOES NOT NECESSARILY INCLUDE A DESCRIPTION OF ITEMS TO BE REPAIRED OR REFINISHED AS A RESULT OF THIS REMOVAL OR MODIFICATION. IN THE ABSENCE OF ANY SPECIFIC DIRECTION, THE CONTRACTOR SHALL REPAIR THE AFFECTED AREA(S) TO A CONDITION EQUAL TO THE ADJACENT AREA(S) AND/OR SIMILAR EXISTING CONDITIONS ON PROJECT.
- THE CONTRACTOR SHALL PROVIDE DUST AND DEBRIS CONTROL THROUGHOUT THE PROJECT'S CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE BUILDING OWNER TO PROVIDE THE LEAST INTERRUPTION OF EXISTING BUILDING OPERATIONS. COORDINATE WITH THE OWNER THE LOCATION OF ON-SITE STORAGE AND STAGING.
- NOT ALL REQUIRED PATCHING AND/OR REPAIRS ARE SPECIFICALLY NOTED ON THIS PLAN.
- COORDINATE DEMOLITION WORK WITH NEW PROPOSED FLOOR PLANS.
- CONTRACTOR SHALL DISCARD AND DISPOSE OF ALL DEMOLISHED ITEMS.
- EXISTING PIPING AND ELECTRICAL OR COMMUNICATION CONDUITS WHICH INTERFERE WITH THE WORK SHALL BE RE-ROUTED BY THE CONTRACTOR.

PIPING MATERIAL SPECIFICATIONS

A. HYDRONIC PIPE (HHWS/R # CHWS/R)

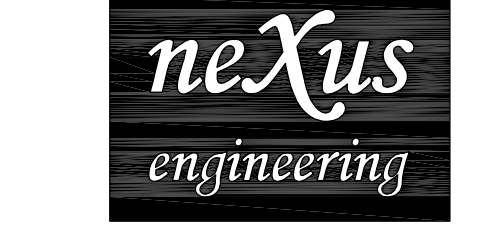
PIPE: COPPER TYPE L PER ASTM B-88
 FITTINGS: WROUGHT COPPER PER ANSI 16.22
 INSULATION: FIBERGLASS WITH ASJ INDOORS, ADD ALUMINUM JACKET OUTDOORS
 2" THICK (HHW)
 1" THICK (CHW)

B. CONDENSATE DRAIN (CD)

PIPE: COPPER TYPE L PER ASTM B-88
 FITTINGS: WROUGHT COPPER PER ANSI 16.22

MECHANICAL LEGEND

DESCRIPTION	SYMBOL
SUPPLY AIR DUCT SECTION	SA
RETURN AIR DUCT SECTION	RA
DUCT SIZE NET INSIDE DIMENSION	30" x 6"
EXHAUST AIR DUCT SECTION	EA
SPLITTER DAMPER W/ LOCKING QUADRANT	EA
FLEXIBLE DUCT CONNECTION	www
DUCT DROP/RISE	
DOOR LOUVER	
AIR EXTRACTOR	
ACCESS DOOR - A.D.	AD
VOLUME DAMPER W/ LOCKING QUADRANT	
AUTO MOTORIZED CONTROLLED DAMPER	3-RD
FIRE DAMPER / CEILING FIRE DAMPER	3-RD
MOTORIZED FIRE / SMOKE DAMPER	3-RD
1ST LETTER - LOCATION	C-CEILING W-WALL F-FLOOR
2ND LETTER - SERVICE	S-SUPPLY R-RETURN E-EXHAUST
NUMBER	300 CFM 12x12
	NS-1 300 CFM 14x6
300 CFM = CUBIC FEET PER MINUTE 12 X 12 = NECK SIZE	
SMOKE DETECTOR	SD
DUCT WITH ACOUSTICAL LINING	
TO BE REMOVED	X X X X X X X X
THERMOSTAT	14
SENSOR	14
2-WAY CONTROL VALVE	
3-WAY CONTROL VALVE	
BALANCE VALVE	
BUTTERFLY VALVE	
CHECK VALVE	
FLEXIBLE COUPLING	
GLOBE VALVE	
MANUAL AIR VENT - MAV	
PETES PLUG	
PRESSURE GAUGE	
REDUCER	
SHUT OFF COCK	
SHUT OFF VALVE	
STRAINER	
THERMOMETER	
UNION	
CHILLED WATER SUPPLY	CHWS
CHILLED WATER RETURN	CHWR
CONDENSATE DRAIN	CD
COOLING TOWER MAKE-UP (WATER)	CT MU
CONDENSER WATER SUPPLY	CHWS
CONDENSER WATER RETURN	CHWR
HEATING HOT WATER SUPPLY	HHWS
HEATING HOT WATER RETURN	HHWR
HIGH PRESSURE STEAM	HPS
LOW PRESSURE STEAM	LPS
MAKE-UP WATER	MU
ABOVE	ABV
ABOVE FINISHED FLOOR	A.F.F.
ACCESS DOOR / ACCESS PANEL	A.D. / A.P.
ANALOG INPUT / ANALOG OUTPUT	AI / AO
AUTOMATIC AIR VENT	AAV
BELOW	BEL
CEILING	CLG
CONCRETE	CONC.
CUBIC FEET PER HOUR (1000 BTU)	CFH
CUBIC FEET PER MINUTE	CFM
DIFFERENTIAL PRESSURE TRANSDUCER	DPT
DIGITAL INPUT / DIGITAL OUTPUT	DI / DO
EXISTING	(E)
FLOW SWITCH	FS
GALLONS PER MINUTE	GPM
THOUSANDS OF BTUS PER HOUR	MBH
NEW	(N)
NOT IN MECHANICAL CONTRACT	N.I.M.C.
OUTSIDE AIR	OSA
POINT OF CONNECTION	POC
REFRIGERANT LIQUID / REFRIGERANT SUCTION	RL / RS
TEMPERATURE CONTROL PANEL	TCP
VALVE	V
WELL TEMPERATURE SENSOR	WTS



Consulting Mechanical Engineers
 1400 Lone Palm Ave.
 Suite A
 Modesto, CA 95351
 Tel: 209.572.7399 Fax: 209.236.1579
 www.nexusengineering.net
 HVAC, Plumbing/Piping, Fire Sprinklers
 Process/Plant Engineering, Refrigeration



CALIFORNIA STATE UNIVERSITY STANISLAUS
DBH COMPUTER LAB AIR HANDLER REPLACEMENT
1 UNIVERSITY CIRCLE, TURLOCK, CA

MECHANICAL LEGEND, SCHEDULES, & NOTES

Revisions	
	ADDENDUM 11/6/2020
Project Number	20148
CSU Project Number	20-360
Date	JUNE 2020
Drawn by	TH
Checked by	AL

M-1