HVAC LEGEND

SYMBOL	DESCRIPTION
COND	LOW PRESSURE CONDENSATE
CPD	CONDENSATE PUMP DISCHARGE
CR	CONDENSER WATER RETURN
CS	CONDENSER WATER SUPPLY
CW	DOMESTIC COLD WATER LINE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
D	DRAIN LINE
FOG	FUEL OIL GAGE LINE
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
HCR	HOT / CHILLED WATER RETURN
HCS	HOT / CHILLED WATER SUPPLY
HG	HOT GAS LINE
HPS	HIGH PRESSURE STEAM
HRS	HEAT RECOVERY SUPPLY
HRR	HEAT RECOVERY RETURN
LIQ	LIQUID LINE
LPS	LOW PRESSURE STEAM
	RETURN RISER
	SUPPLY RISER
	AIR VENT – PLAN VIEW
	CAPPED LINE
	EXISTING WORK TO REMAIN
	EXISTING WORK TO BE REMOVED
HWHR	HEATING WATER HEATING RETURN
HWHS	HEATING WATER HEATING SUPPLY
	COLD AIR HIGH PRESSURE DUCT
	HOT AIR HIGH PRESSURE DUCT
C	RISE OR DROP
	PIPE BRANCH TOP CONNECTION
	PIPE BRANCH BOTTOM CONNECTION
	PIPE ANCHOR
	PIPE FLANGES
	PIPE GUIDE
	PIPE UNION
	FLEXIBLE PIPE CONNECTION
	FLEXIBLE DUCT
	SPIN–IN FITTING WITH BALANCE DAMPER

SYMBOL	DESCRIPTION
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	TEE WITH NIPPLE & CAP
	PLUGGED TEE
	Y–TYPE STRAINER
	PETE'S PLUG
	COMB. BALANCE & STOP VALVE
	BALL VALVE
M	BALL VALVE W/MEMORY STOP
	GATE VALVE (SCREWED BODY)
	DRAIN VALVE WITH HOSE END
	GLOBE VALVE
	GATE VALVE (FLANGED BODY)
	AUTO CONTROL VALVE
	SOLENOID VALVE
	CHECK VALVE
	GAS COCK OR BALANCE VALVE
	METERED BALANCE VALVE
	BUTTERFLY VALVE
M	BUTTERFLY VALVE W/MEMORY STOP
T	TEMPERATURE SENSOR
F	FLOW SWITCH
T	THERMOSTAT
H	HUMIDISTAT
C	CO2 SENSOR
	THERMOMETER
	CONNECT TO EXISTING
	SUPPLY DUCT UP
	SUPPLY DUCT DOWN
	R.A., O.A., OR EXH. DUCT UP
	R.A., O.A., OR EXH. DUCT DOWN
Ø	ROUND DUCT
	FLAT OVAL DUCT
	45° BOOT BRANCH TAKEOFF
	ELBOW WITH TURNING VANES
	FIRE DAMPER
	MAN. DAMPER
	ACCESS DOOR

HVAC ABBREVIATIONS

AB.	ABOVE
A.D.	ACCESS DOOR
A.F.F.	ABOVE FINISHED FLOOR
APPROX.	APPROXIMATELY
ARCH.	ARCHITECT
AUTO. CONT.	AUTOMATIC CONTROL
BSBD. RAD.	BASEBOARD RADIATION
BTM.	BOTTOM
BLDG.	BUILDING
CAB.	CABINET
CAP.	CAPACITY
CLG.	CEILING
CONC.	CONCRETE
CONN.	CONNECT
CONTR.	CONTRACTOR
CONT.	CONTINUATION
CONV.	CONVECTOR
COORD.	COORDINATE
DTL.	DETAIL
DIA.	DIAMETER
DIFF.	DIFFUSER
DISCH.	DISCHARGE
DN.	DOWN
ELEC.	ELECTRICAL
E.A.	EXHAUST AIR
ELEV.	ELEVATION
EXH	EXHAUST
EXIST.	EXISTING
FT. HD.	FEET OF HEAD
FIN. RAD.	FINNED RADIATION
F & S DPR	FIRE & SMOKE DAMPER
FLEX.	FLEXIBLE
F & T	FLOAT & THERMOSTATIC
FLR.	FLOOR
F.D.	FLOOR DRAIN
FURN.	FURNISH
GA.	GAGE
GEN.	GENERAL
GRAV.	GRAVITY
GR.	GRILLE
HTR.	HEATER

HTG.	HEATING
H & A/C	HEATING & AIR CONDITIONING
H & C	HEATING & COOLING
H & V	HEATING & VENTILATING
H.V.	HIGH VELOCITY
IND. U.	INDUCTION UNIT
MAN. DPR.	MANUAL DAMPER
MFR.	MANUFACTURER
MECH.	MECHANICAL
M. A.	MIXED AIR
MTD.	MOUNTED
NOM.	NOMINAL
OPNG.	OPENING
O.A.	OUTSIDE AIR
PLBG.	PLUMBING
PRESS.	PRESSURE
P.R.V.	PRESSURE REDUCING VALVE
PROP.	PROPELLER
RAD.	RADIATOR
REFG.	REFRIGERATION
REG.	REGISTER
RHC.	REHEAT COIL
REQD.	REQUIRED
REL.	RELIEF
R.A.	RETURN AIR
RM.	ROOM
SCHED.	SCHEDULE
SHT.MTL.	SHEET METAL
SQ.	SQUARE
STAT.	THERMOSTAT
S.A.	SUPPLY AIR
S & R	SUPPLY & RETURN
TEMP.	TEMPERATURE
THERM.	THERMOMETER
TYP.	TYPICAL
T.C.C.	TEMP. CONTROL CONTRACTOR
U.H.	UNIT HEATER
U.V.	UNIT VENTILATOR
VIB. ISOL.	VIBRATION ISOLATOR
W/W	WALL TO WALL
W/	WITH

EXISTING AIR HANDLING UNIT TAP.AC.01 SCHEDULE

MANUFACTURER'S MODEL NUMBER BASED ON TEMTROL UNLESS OTHERWISE NOTED.

MZ – MULTI–ZONE; H & A/C – HEATING AND AIR CONDITIONING; H & V – HEATING & VENTILATING; F.C. – FORWARD CURVED; A.F. – AIR FOIL; A.T.L. – ACROSS THE LINE; VAV – VARIABLE AIR VOLUME; VFD – VARIABLE FREQUENCY DRIVE

UNIT UNIT				SUPPLY FAN DATA							SUPPLY FAN MOTOR DATA				COOLING COIL DATA (4) COOLING COIL SELECTIONS BASED ON ENTERING WATER WITH A 14°F RISE.							HEATING COIL DATA (4) HEATING COIL SELECTIONS BASED ON 180°F ENTERING WATER WITH A 40° DROP					RETURN FAN DATA							RETURN FAN MOTOR DATA				GEN. INFORMATION			REMARKS
UNIT NUMBER	LOCATION	MFGR & MODEL NUMBER	TYPE	CFM	TOTAL S.P. "W.G.	EXT. S.P. "W.G.	RPM	WHEEL TYPE & SIZE	TIP SPEED F.P.M.	O.V. F.P.M.	MOTOR H.P.	TOTAL B.H.P. REQ'D.	VOLTS / PHASE	TYPE MOTOR STARTING	CFM	ROWS & FINS PER INCH	GPM	WTR. P.D. FT. HD.	AIR P.D. " W.G.	COIL F.A. SQ. FT.	ENT. AIR TEMP. D.B. (°F)	ENT. AIR TEMP. W.B (°F)	LVG. AIR TEMP. D.B. (°F)	LVG. AIR TEMP. W.B (°F)	CFM	ROWS & TYPE FIN	GPM	WTR. P.D. FT. HD.	AIR P.D. " W.G.	COIL F.A. SQ. FT.	ENT (°F)	LVG (°F)	CFM	TOTAL S.P. "W.G.	EXT. S.P. "W.G.	RPM	WHEEL TYPE & SIZE	TIP SPEED F.P.M.	O.V. F.P.M.	MOTOR H.P.	B.H.P. REQ'D.	VOLTS / PHASE	TYPE MOTOR STARTING	ARRANG.	FILTER AREA	MIN. %	
AC–1	BASEMENT MECH. RM.	TEMTROL	VAV	(2) @ 4,565	3.85	2.00	2619	PLUG 18"	–	–	2 @ 7–1/2	8.51	208 / 3	V.F.D.	9,125	8 ROW 8 FPF	83.4	8.4	0.84	18.7	80	67	51.3	51.3	9,125	1 ROW 8 FPF	24	2.28	0.08	19.0	48	78.8	2 @ 4,565	1.2	1.2	1513	PLUG 20"	–	–	2 @ 2	2.96	208 / 3	V.F.D.	DRAW THRU	20.0	30	1 2 3 4 5

(1) UNIT FURNISHED WITH DUAL SUPPLY AIR FANS FOR A TOTAL OF 9,130 CFM AIRFLOW. (2) UNIT FURNISHED WITH DUAL RETURN AIR FANS FOR A TOTAL OF 9,000 CFM AIRFLOW. (3) VARIABLE FREQUENCY DRIVES SHALL BE CONFIGURED TO RUN EITHER BOTH S.A. FANS AND BOTH R.A. FANS OR A (1) S.A. FAN AND (1) R.A. FAN. (4) NEW COIL INFORMATION FOR EXISTING COILS TO INCREASE MINIMUM OUTSIDE AIR TO 3,000 CFM. REBALANCE WATER FLOWS TO GPM LISTED. (5) INCREASE OUTSIDE AIR TO 3,000 CFM.

HVAC NOTES

1. PIPING AND DUCT LAYOUT IS ONLY SCHEMATIC, EXACT LOCATION OF PIPES AND DUCTS TO BE COORD. ON JOB W/BLDG. STRUCTURE, AND WORK OF OTHER CONTRS.
2. SUPPORT ALL STEEL PIPE AT INTERVALS OF NOT MORE THAN 10'–0", COPPER PIPE AT 8'–0".
3. RUN ALL WATER SUPPLY AND RETURN MAINS LEVEL UNLESS OTHERWISE NOTED.
4. RUNOUTS TO UNITS BELOW MAINS TO BE TAKEN FROM BTM. OF MAINS AT 45°, PITCH DN TO UNITS. RUNOUTS TO UNITS AB. MAINS TO BE TAKEN FROM TOP OF MAINS AT 45°, PITCH UP TO UNITS. PITCH –1" IN 10'–0".
5. RUN ALL DRAIN LINES INDIRECT TO NEAREST F.D.
6. INSTALL AIR VENTS AT HIGH POINTS OF SYSTEM, AS SHOWN ON DRAWINGS AND AS REQ'D. FOR PROPER AIR VENTING OF SYSTEM.
7. INSTALL WATER BALANCING DEVICES ON ALL WATER HEATING UNITS.
8. LABEL ALL FIRE DAMPERS AND FIRE/SMOKE DAMPERS.
9. ALL DUCTS AND PIPES AB. CLG. UNLESS OTHERWISE NOTED.
10. OFFSET DUCTS INTO JOIST OR BEAM SPACE FOR CLEARANCE WHERE SPACE AB. CLG. IS NOT SUFFICIENT FOR DUCTS TO CROSS OTHER DUCTS OR WORK OF OTHER CONTRS.
11. INSTALL BALANCING DPRS. AS SHOWN AND AS REQ'D FOR PROPER BALANCING AIR HANDLING SYSTEMS.
12. PROVIDE AIRTIGHT A.D. IN DUCTS ADJACENT TO ALL AUTOMATIC DPRS. AND TEMP. CONTROL DEVICES.

FAN COILS HAVE BEEN PRE–PURCHASED BY MIAMI UNIVERSITY

FAN COIL UNIT SCHEDULE

MANUFACTURER'S MODEL NUMBER BASED ON IEC UNLESS OTHERWISE NOTED.

NO./ MU ID #	QUANTITY	MODEL NO.	CFM	GPM COIL H / C	COIL PRESS. DROP FT. WATER	COIL ROWS	COIL CAPACITY COOLING SENS. HEAT BTU/HR.	COIL CAPACITY COOLING TOTAL HEAT BTU/HR.	COOLING E.W.T. °F	COOLING LWT °F	CW PIPE SIZE	HTG. MBH / ROWS	HW PIPE SIZE	MOTOR H.P. (WATTS)	FLA	MOCP	VOLT / PHASE	REMARKS
TAP.FCU.01 TAP.FCU.02 TAP.FCU.03	–	MPY–12	1250	2.7 / 5.8	17.7 / 7.2	4	31,938	43,850	44	59	1"	28.8 / 1	3/4"	–	6.4	–	120 / 1	1 2 3 4 5 6 7 8

(1) HEATING ENTERING WATER 130°F LEAVING WATER 110°F (2) HEATING 70°FDB ENTERING AIR (3) COOLING 80°FDB, 67°FWB ENTERING AIR (4) UNITS LOCATED IN THE LOWER LEVEL SHALL BE FACTORY FURN. WITH CONDENSATION PUMPS. (5) PROVIDE FACTORY SUPPLIED AND MOUNTED FUSED DISCONNECT SWITCH. (INCLUDE FUSES). (6) UNIT SUPPLY AIR PLENUM TO EXTEND TO EXISTING CEILING. (7) UNIT TO BE CONCEALED TYPE CONSTRUCTED TO HAVE DRYWALL ATTACHED TO CABINET. (8) HEATING COIL TO BE MOUNTED IN THE REHEAT POSITION DOWNSTREAM OF THE COOLING COIL.

AIR TERMINAL SCHEDULE

TYPE OF OUTLET — A – 8 – 300 — AIR QUANTITY IN C.F.M. (DIFF. & REG. ONLY)

SIZE OF OUTLET (NECK SIZE DIAMETER FOR DIFFUSERS)

TYPE	DESCRIPTION
A	SUPPLY AIR GRILLE, SURFACE MOUNTED, TITUS MODEL 300RS; 16" X 8" UNLESS OTHERWISE NOTED.

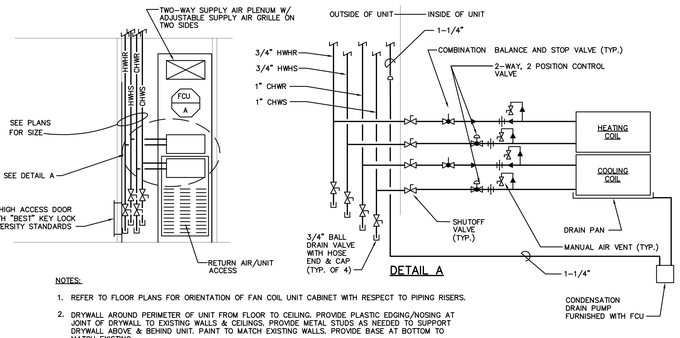
VAV BOXES HAVE BEEN PRE–PURCHASE BY MIAMI UNIVERSITY

VAV BOX SCHEDULE

REHEAT COIL SELECTIONS BASED ON 45°F AIR TEMP. RISE, 30°F WATER TEMP. DROP, 180°F ENTERING WATER, 55°F ENTERING AIR

BOX NO.	SIZE	MAX CFM	MIN CFM COOLING	MIN CFM HEATING	NC	GPM	MBH	PIPE SIZE	REMARKS
B–1	10"ø	880	265	440	25	1.4	21.5	3/4"	EXISTING TO REMAIN
B–2	10"ø	200	100	100	–	0.5	15.0	3/4"	(1)
B–3	8"ø	455	140	230	20	0.7	11.2	3/4"	EXISTING TO REMAIN
B–4	8"ø	550	165	275	20	0.9	13.4	3/4"	EXISTING TO REMAIN
B–5	8"ø	750	225	375	24	1.2	18.3	3/4"	EXISTING TO REMAIN
B–6	16"ø	2800	840	1400	27	4.6	68.4	1"	EXISTING TO REMAIN
B–7	14"ø	200	100	100	–	0.5	15.0	3/4"	(1)
B–8	10"ø	830	250	415	25	1.4	20.3	3/4"	EXISTING TO REMAIN
1–1	10"ø	500	500	500	20	1.1	16.2	3/4"	(2) (3)
1–2	10"ø	500	500	500	20	1.1	16.2	3/4"	(2) (3)
2–1	10"ø	500	500	500	20	1.1	16.2	3/4"	(2) (3)
2–2	10"ø	500	500	500	20	1.1	16.2	3/4"	(2) (3)
3–1	10"ø	500	500	500	20	1.1	16.2	3/4"	(2) (3)
3–2	10"ø	500	500	500	20	1.1	16.2	3/4"	(2) (3)

(1) REBALANCE TO NEW CFM AND GPM AS LISTED. VAV BOX TO BE CONTROLLED BY NEW CO2 SENSOR. (2) NEW CONSTANT VOLUME VAV BOX. (3) 30°F AIR TEMPERATURE RISE.

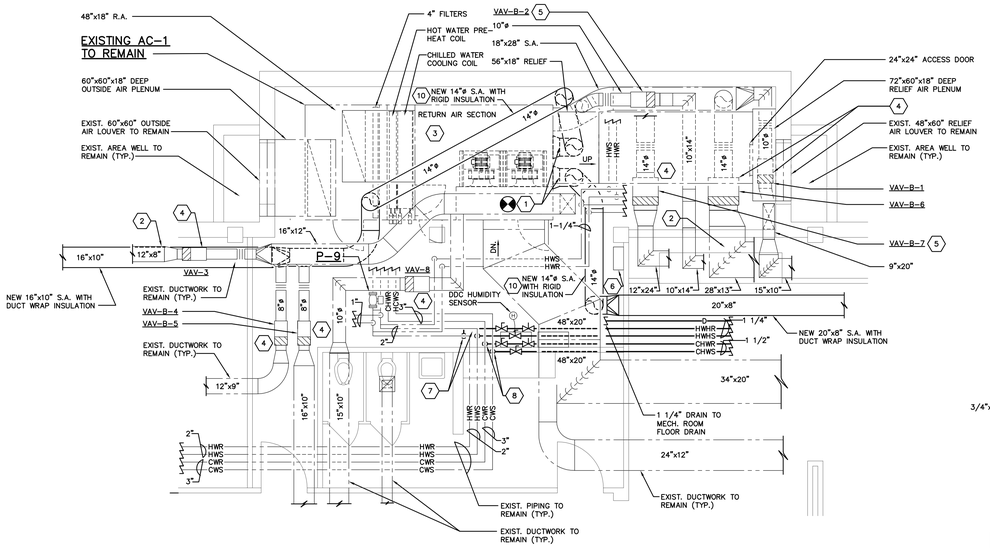


NOTES:

1. REFER TO FLOOR PLANS FOR ORIENTATION OF FAN COIL UNIT CABINET WITH RESPECT TO PIPING RISERS.
2. DRYWALL AROUND PERIMETER OF UNIT FROM FLOOR TO CEILING. PROVIDE PLASTIC EDGING/NOSING AT JOINT OF DRYWALL TO EXISTING WALLS & CEILINGS. PROVIDE METAL STUDS AS NEEDED TO SUPPORT DRYWALL ABOVE & BEHIND UNIT. PAINT TO MATCH EXISTING WALLS. PROVIDE BASE AT BOTTOM TO MATCH EXISTING.

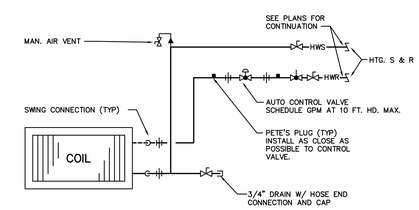
VERTICAL FAN COIL UNIT INSTALLATION DETAIL

NO SCALE



CODED NOTES ⬡

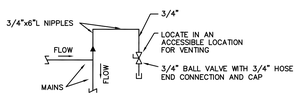
1. CONNECT TO EXISTING TAP.AC.01 AIR HANDLING UNIT S.A. PLENUM. PROVIDE 18"ø TO 14"ø BELL MOUTH FITTING & REINFORCE UNIT CABINET AROUND OPENING AS RECOMMENDED BY TEMTROL. VERIFY WITH JIM PATTERSON OF WRP: PHONE 513–321–5204.
2. EXISTING DUCTWORK TO REMAIN. (TYP.)
3. EXISTING AIR HANDLING UNIT TO REMAIN.
4. EXISTING VAV BOXES TO REMAIN.
5. REBALANCE TO NEW CFM & GPM AS LISTED ON VAV BOX SCHEDULE. UNIT TO BE DDC CONTROLLED BY NEW CO2 SENSORS TO CONTROL VENTILATION AIR TO THE SPACE.
6. EXISTING SIEMENS DDC CONTROL PANEL TO REMAIN. MODIFY OR ADD AS NEEDED FOR NEW SEQUENCES & EQUIPMENT.
7. CONNECT NEW 1–1/4" HWHS & HWHR TO EXISTING 2" HWHS & HWHR PROVIDE ISOLATION BALL VALVES IN BOTH & COMBINATION BALANCE & STOP VALVE WITH METER PORTS IN HWHR.
8. CONNECT NEW 1–1/2" CHWS & CHWR TO EXISTING 3" HWHS & HWHR PROVIDE ISOLATION BALL VALVES IN BOTH & COMBINATION BALANCE & STOP VALVE WITH METER PORTS IN CHWR.
9. DO NOT INSTALL PIPING AND VALVES DIRECTLY ABOVE VARIABLE SPEED DRIVES. INSTALL A SEALED DRIP PAN WITH 3/4" DRAIN TO FLOOR UNDER PIPING IN FRONT OF VARIABLE SPEED DRIVES.
10. DUCT INSULATION IN MECHANICAL ROOM SHALL BE COVERED WITH AN ASJ+ INSULATION COVER.



NOTE:
1. PIPE SIZES AS LISTED IN VAV BOX SCHEDULE.

BOX REHEAT COIL PIPING

2–WAY CONTROL VALVE



MANUAL AIR VENT PIPING

BASEMENT MECHANICAL ROOM 021 HVAC NEW WORK PLAN

SCALE: 1/4"=1'–0"

03/24/22	(1) ADDENDUM 2
02/21/22	CONSTRUCTION/BID DOCUMENTS
02/11/22	DD REVIEW
DATE	DESCRIPTION

H–500–21381

ASSOCIATE ENGINEER
PRATER Engineering Associates, Inc.
6130 Wilcox Road
Dublin, Ohio 43016
(614) 766 4896
FAX: (614) 766 2354

SEAL

MIAMI UNIVERSITY
TAPPAN HALL
VENTILATION AIR IMPROVEMENTS

PREPARED FOR
MIAMI UNIVERSITY
PHYSICAL FACILITIES DEPARTMENT
OXFORD, OH

PREPARED BY
PRATER ENGINEERING ASSOCIATES
6130 WILCOX ROAD; DUBLIN, OHIO 43016

SHEET TITLE: ENLARGED PLAN, DETAILS & SCHEDULES

SHEET NO.: H-500

SCALE: 1/4" = 1'–0"

COMM. NO.	DESIGNED BY	CHECKED BY	DATE
21381	JRL	KJO	02/21/22