AIR HANDLING UNIT SCHEDULE

PLAN CODE	MANUF. & MODEL NO.	LOCATION	AREA SERVED	DIRECT DRIVE FAN DATA: FAN SERVICE, NO. & WHEEL DIA.			FAN CLASS	FAN RPM @ ALT.	CFM	T.S.P. @ ALT. (IN. WC)	E.S.P. @ S.L. (IN. WC)	ELECTRICAL: HP	ELECTRICAL: VOLT/ ø/HZ	ELECTRICAL: RPM	FAN VIBRATION ISOLATION	COIL SERVICE	MIN. ROWS/ MAX FPI	CFM	FACE VEL. (FPM)	APD (IN W.C.)	EAT: DB (°F)	EAT: WB (°F)	LAT: DB (°F)	LAT: WB (°F)	MBH: TOT.	MBH: SENS.	EWT	LWT	GPM	% P.G.	WTR PD (FT.)	FILTER DATA: TYPE	FILTER DATA: TOTAL AREA (SQ FT.)	FILTER DATA: FACE VEL. (FPM)	FILTER DATA: FILTER P.D. (IN W.C.)	FILTER DATA: % EFF.	SIZE: L	SIZE: W	SIZE: H	WT. (LBS)	REMARKS
MAU-5	TEMTROL	FAN LOFT	NW FTLB	SUPPLY	4	16	II	3574	15,000	7.00	2.50	(4)@7.5	460/3/61	3525	2" SPRINGS	COOLING	8/14	15,000	450.0	0.86	100.0	62.6	55.9	47.0	553.7	553.7	55.0	67.0	92.0	–	12.16	2" TA	30.75	487.8	0.56	30%	353"	96"	84"	16,000	1,2,3,4,5,6,7,8,9
																HEATING	2/10	15,000	450.0	0.17	0.0	–	95.5	–	1,466.7	1,466.7	180.0	146.2	89.0	–	9.65	12"	30.75	487.8	1.50	99%					
																ENERGY REC. SUMMER	8/8	15,000	450.0	0.45	100.0	62.6	84.8	57.8	191.1	191.1	82.1	89.0	60.0	40.0	16.04	–	–	–	–	–					
																ENERGY REC. WINTER	8/8	15,000	450.0	0.52	-5.0	–	22.7	–	430.9	430.9	43.0	27.5	60.0	40.0	18.4	–	–	–	–	–					

NOTES:
1. VARIABLE VOLUME AIR HANDLING UNIT WITH FAN WALL. PROVIDE (2) VFD'S FOR (4) SUPPLY FANS.
2. 3" DOUBLE WALL CONSTRUCTION WITH MINIMUM 3" LINER
3. PROVIDE 54" DIRECT EVAPORATIVE COOLING SECTION AS THE PRIMARY COOLING SOURCE.
4. PROVIDE UNIT WITH 6" BASE RAILS, UNIT HEIGHT INCLUDES BASE RAIL.
5. MOUNT BASE RAILS ON SPRING TYPE VIBRATION ISOLATORS.
6. INDICATED FILTER PRESSURE DROP IS FOR MID-LIFE OF THE FILTER. PROVIDE MERV 8 PRE-FILTER AND MERV 16 FINAL-FILTER.
7. ELECTRICAL TO PROVIDE POWER CONNECTION TO VFD AND A 120V/1/60 JUNCTION BOX IN THE SPACE FOR SERVICE TO DDC CONTROLS.
8. INDICATED COIL PRESSURE DROPS ARE MAXIMUM ALLOWABLE, MINIMIZE WHERE POSSIBLE.
9. CONTROLS CONTRACTOR SHALL PROVIDE ALARM POINTS FOR EACH SUPPLY FAN (4). ALARM TO INDICATE IF FAN IS NOT IN OPERATION. COORDINATE WITH ELECTRICAL CONTRACTOR TO ENSURE ALARM POINTS ARE BASED ON EXISTING TRANSFORMER CAPACITIES.

EXHAUST AIR HANDLING UNIT SCHEDULE

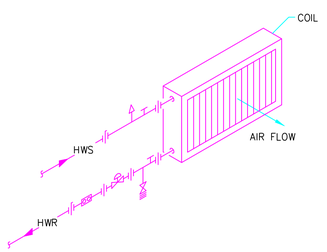
PLAN CODE	MANUF. & MODEL NO.	LOCATION	AREA SERVED	COIL DATA: COIL SERVICE	MIN. ROWS/ MAX FPI	CFM	FACE VEL. (FPM)	APD (IN W.C.)	EAT: DB (°F)	EAT: WB (°F)	LAT: DB (°F)	LAT: WB (°F)	MBH: TOT.	MBH: SENS.	EWT	LWT	GPM	% P.G.	WTR PD (FT.)	FILTER DATA: TYPE	FILTER DATA: TOTAL AREA (SQ FT.)	FILTER DATA: FACE VEL. (FPM)	FILTER DATA: FILTER P.D. (IN W.C.)	FILTER DATA: % EFF.	SIZE: L	SIZE: W	SIZE: H	WT. (LBS)	REMARKS
EAU-5	TEMTROL	MEZZANINE	NW FTLB	WINTER	8/12	15,000	499.5	0.94	72.0	52.0	38.9	37.7	437.4	437.4	27.5	43.2	60.0	40.0	14.05	2" TA	30.03	499.5	0.56	30%	85"	224"	63"	10,250	1,2,3,4,5,6,7,8,9
				SUMMER	8/12	15,000	499.5	0.88	75.0	–	87.2	–	161.6	161.6	89.0	83.2	60.0	40.0	12.42	12"	30.03	499.5	1.50	99%					

NOTES:
1. EXHAUST AIR HANDLING UNIT. PROVIDE WITH (3) 36"ø DUCT CONNECTIONS AS INDICATED ON THE PLANS.
2. 3" DOUBLE WALL CONSTRUCTION WITH MINIMUM 3" LINER
3. PROVIDE UNIT WITH 6" BASE RAILS, UNIT HEIGHT INCLUDES BASE RAIL.
4. UNIT CASING IS PROVIDED WITH ROOM TO MOUNT A MERV-16 FINAL FILTER. FILTER IS FUTURE AND NOT PART OF THIS WORK.
5. INDICATED FILTER PRESSURE DROP IS FOR MID-LIFE OF THE FILTER. PROVIDE MERV 8 PRE-FILTER.
6. ELECTRICAL TO PROVIDE POWER CONNECTION TO VFD AND A 120V/1/60 JUNCTION BOX IN THE SPACE FOR SERVICE TO DDC CONTROLS.
7. INDICATED COIL PRESSURE DROP IS MAXIMUM ALLOWABLE, MINIMIZE IF POSSIBLE.
8. PROVIDE 40.0% PROPYLENE GLYCOL FOR DECOUPLED ENERGY RECOVERY SYSTEM.
9. ONE COIL PRESENT IN UNIT, USED FOR SUMMER AND WINTER CONDITIONS.

LAB EXHAUST FAN SCHEDULE

PLAN CODE	MANUFACTURER & MODEL NO.	TYPE	SERVICE	Dba	CFM MAX.	CFM MIN.	T.S.P. @ S.L.	RPM MAX.	RPM MIN.	MOTOR: MAX. HP	MOTOR: MIN. HP	MOTOR: TYPE	MOTOR: LOSS (%)	MOTOR: V/ø/HZ	WT (LBS)	VIB. ISOL.	CONTROL	NOZZLE VELOCITY MAX (FT/MIN)	NOZZLE VELOCITY MIN (FT/MIN)	PLUME HEIGHT MIN (FT)	DAMPER TYPE	REMARKS
EF-5A	GREENHECK 27-AFSW-41	VARIABLE	LAB EXHAUST	91	15,000	12,950	6.5	1725	1725	25	25	BELT	5%	460/3/60	850	NOTE: 1	NOTE: 4	3,000	2,500	35.6	NOTE: 2	1,2,3,4,5,6,7,8,9,10,11,12
EF-5B	GREENHECK 27-AFSW-41	VARIABLE	LAB EXHAUST	91	15,000	12,950	6.5	1725	1725	25	25	BELT	5%	460/3/60	850	NOTE: 1	NOTE: 4	3,000	2,500	35.6	NOTE: 2	1,2,3,4,5,6,7,8,9,10,11,12

NOTES:
1. REFER TO SPECIFICATIONS FOR VIBRATION ISOLATION REQUIREMENTS.
2. MOTORIZED BACKDRAFT DAMPER.
3. INTEGRAL DISCONNECT.
4. FAN SHALL OPERATE ON VFD BETWEEN 15,000 CFM TO A MINIMUM OF 12,950 CFM..
5. FUTURE FAN INDICATED ON PLANS IS FOR REFERENCE ONLY.
6. ACCESSORIES: SPARK RESISTANT, BELT DRIVE, DRAIN CONNECTION, OUTLET FLANGE, 316 SS INLET FLANGE, AND INDUSTRIAL EPOXY COATING.
7. DDC, T.C. TO PROVIDE CONTROLLER TO ENABLE THE FAN CONTINUOUSLY 24/7.
8. PLUME HEIGHTS ARE CALCULATED WITH AN OUTSIDE WIND SPEED OF 10 MPH.
9. FAN SIZED FOR FUTURE MERV-16 FINAL FILTER.
10. UNIT SHALL BE HI-PRO POLYESTER COATING - DARK GREY (041) FOR ENTIRE UNIT.
11. UNIT SHALL INCLUDE BOLTED ACCESS DOORS, SURE-FLOW PROBES, A NEMA PREMIUM EFFICIENCY MOTOR, AND A 1" DRAIN CONNECTION.
12. SURE-FLOW PROBES - T.C. CONTRACTOR SHALL PROVIDE CONTROL PANEL TO CONVERT PRESSURE SIGNAL FROM FAN TO A CFM READING TO BE INPUT INTO DDC SYSTEM.



1 / M-06 ENERGY RECOVERY COIL PIPING DIAGRAM
SCALE: NONE

BLOWER COIL UNIT SCHEDULE

PLAN CODE	MANUF. & MODEL NO.	LOCATION	UNIT TYPE	FAN DATA: CFM TOTAL @ 5300'	FAN DATA: CFM O.A. @ 5300'	FAN DATA: E.S.P. IN W.C. @ SL	COOLING COIL DATA: EAT (°F)	COOLING COIL DATA: LAT (°F)	COOLING COIL DATA: EWT (°F)	COOLING COIL DATA: LWT (°F)	COOLING COIL DATA: MBH TOTAL/ SENSIBLE	COOLING COIL DATA: GPM	COOLING COIL DATA: WTR PD (FT.)	HEATING COIL DATA: EAT (°F)	HEATING COIL DATA: LAT (°F)	HEATING COIL DATA: EWT (°F)	HEATING COIL DATA: LWT (°F)	HEATING COIL DATA: MBH TOTAL/ SENSIBLE	HEATING COIL DATA: GPM	ELECTRICAL: VOLTS/ PHASE	ELECTRICAL: MOTOR HP	FILTER	REMARKS
FCU-101	INTERNATIONAL ENVIRONMENTAL CBY10	LAB 101	HORIZONTAL CEILING EXPOSED	900	0	0	80	60.3	55	58.3	17.9	11	12.3	70	119.5	180	98.2	45.0	1.1	115/1	1/12 (2X)	1"	1,2,3,4

NOTES:
1. ACCEPTABLE MANUFACTURERS: AIRTHERM, AMERICAN AIR FILTER, CARRIER, TRANE, YORK
2. EXTERNAL STATIC PRESSURE DOES NOT INCLUDE LOSSES FOR UNIT CASING, FILTERS, OR COILS.
3. DIRECT DRIVE.
4. INSULATED CABINET.

NO.	REVISIONS	DATE	BY	APP'D.	BAE
0	50% CONSTRUCTION DOCUMENTS	8-25-11	·	·	·
1	90% CONSTRUCTION DOCUMENTS	9-30-11	·	·	·
2	100% CONSTRUCTION DOCUMENTS	11-3-11	·	·	·
3	FOR CONSTRUCTION	1-20-12	·	·	·
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NO.	REVISIONS	DATE	BY	APP'D.	BAE
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FILE INFORMATION			
USER: DLD	DATE: 1/20/12	TIME: .	XREF'S: .
DWG. FILE:		LAYOUT: .	
DWG. FOLDER:			
ACAD VERSION: AUTOCAD 2010			
PLATFORM: WINDOWS XP			
BORDER: ZBD2234D-3.DWG	PLOT SCALE: 1:1		UNITS: ARCH
PLOT INFO.: NREL.STB			

ENGINEERING REVIEW	APPROVAL	DATE
DESIGNER	DLD	
ENGINEER	DLD	
CHECKED BY	MTM	
A/E APPROVED BY	·	·
NREL APPROVED BY	·	·
BLDG. AREA ENG.	·	·

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MECH
THERMO-CHEM LABORATORY 101 CONVERSION
TASK ORDER 13
HVAC SCHEDULES / HVAC DIAGRAMS

DRAWING NO. PREFIX	DRAWING NO.	REVISION NO.
FLTB-135-	M-06	3
NREL PROJECT NO.	NREL WORK ORDER NO.	A/E PROJECT NO.
EX2010034	13	11261