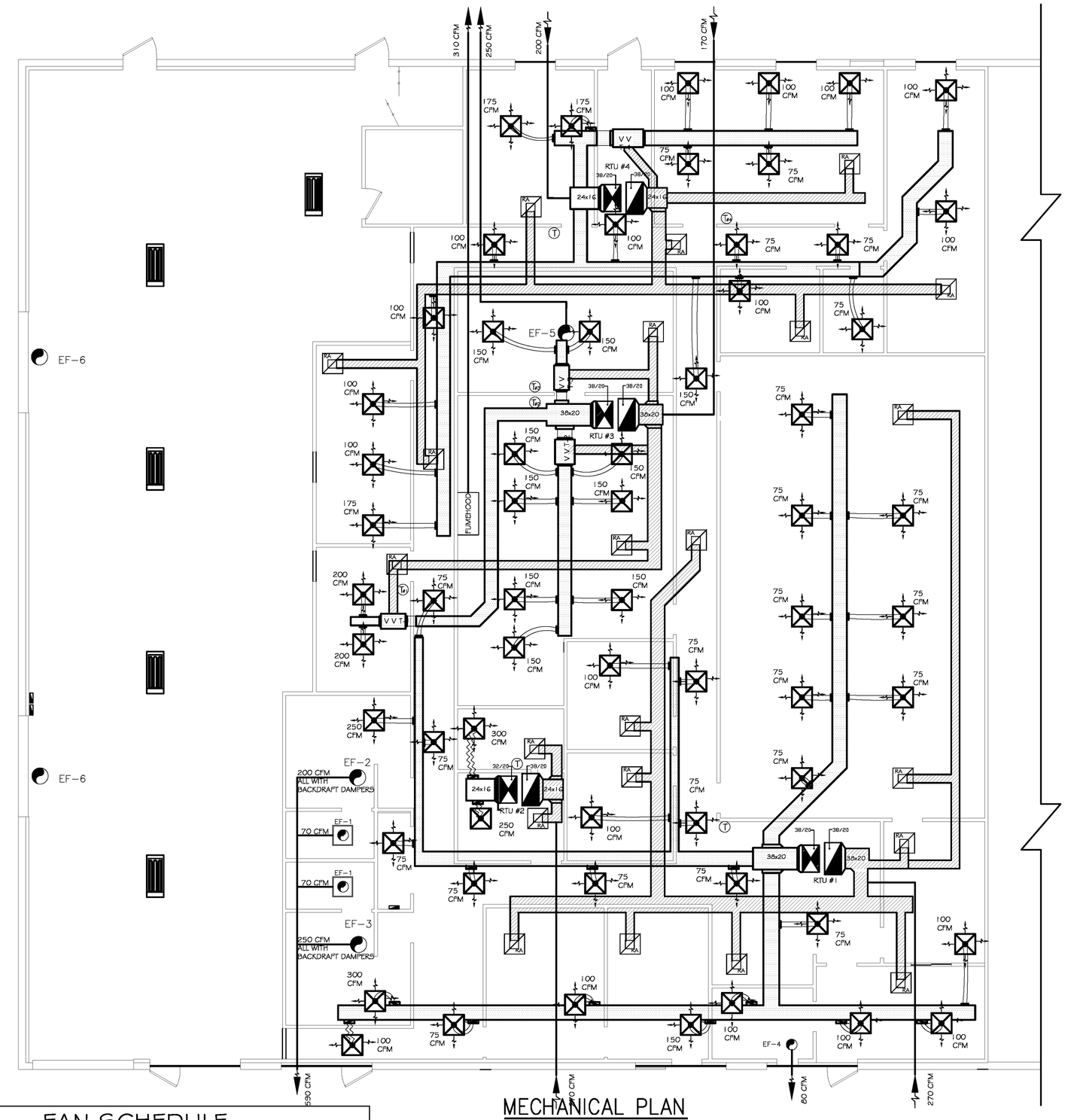
LEGEND

- INDICATES NEW CEILING DIFFUSER - CFM AS NOTED - 24x24 UNLESS OTHERWISE NOTED. SIZE INDICATES NECK SIZE
- INDICATES NEW RETURN AIR CEILING TRANSFER GRILLE OF SIZE INDICATED. TRANSFER DUCT TO BE FLEX OR RECTANGULAR AS INDICATED.
- V V T (VARIABLE VOLUME & TEMPERATURE) TERMINAL V V T TERMINALS SHALL BE SIZED BASED ON THE CFM REQUIREMENT OF THE AREA THEY SERVE. CONTRACTOR TO SUPPLY ELECTRIC HEATING ELEMENT FOR V V T #1, V V T #2 AND V V T #3. CONTRACTOR TO MAKE ALL TRANSITIONS FROM DUCTWORK TO TERMINAL INLETS AND OUTLETS.
- EXHAUST FAN
- V V T (VARIABLE VOLUME & TEMPERATURE) TERMINAL DIGITAL USER INTERFACE.
- DIGITAL THERMOSTAT.
- RTU (ROOFTOP UNIT)
- INDICATES NEW SHEET METAL DUCTWORK FOR SUPPLY AIR, INSULATION SHALL BE 2" THICK AND ONE POUND PER CUBIC FOOT DENSITY W/ FOIL FACING.
- INDICATES NEW SHEET METAL DUCTWORK FOR RETURN AIR, INSULATION SHALL BE 2" THICK AND ONE POUND PER CUBIC FOOT DENSITY W/ FOIL FACING.
- ROUND FLEX DUCT, MAX. LENGTH 12'-0", MIN. R-6 PROVIDE MAN. DAMPER AT DIFFUSER CONNECTIONS, SIZE AS INDICATED OR:
  0<=199 CFM USE 5" Ø
  200<=250 CFM USE 6" Ø
  251<=300 CFM USE 7" Ø
- WAREHOUSE HEATER: 208V - 6.0 KW; TPI CORPORATION CH-620-3A HEAVY DUTY METAL SHEATH ELECTRIC INFRARED HEATER; PROVIDE EACH UNIT WITH THERMOSTAT, WIRE GUARDS, SCR CONTROLLERS AND POWER CONTACTOR PANEL. MOUNT AT 12' AFF COORDINATE WITH ELECTRICIAN FOR MOUNTING OF LIGHTING.

MECHANICAL NOTES:

1. ALL DUCTWORK SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH SMACNA STANDARDS.
2. ALL NEW SUPPLY AIR DUCTS, RETURN AIR DUCTS, OUTSIDE AIR DUCTS AND PLENUMS SHALL BE GALVANIZED STEEL, EXTERNALLY INSULATED WITH 2" THICK 1 PCF DENSITY INSULATION WITH FOIL FACING.
3. ROUND FLEXIBLE DUCT TO BE UL-181, CLASS 1, AIR DUCT MATERIALS.
4. IN ALL SYSTEMS 2000 CFM AND OVER, BUT LESS THAN 15,000 CFM, SMOKE DETECTORS SHALL BE INSTALLED, IN ACCORDANCE WITH NFPA 72E & NFPA 90A, IN THE RETURN DUCT UPSTREAM OF THE AIR HANDLING UNIT AND DOWNSTREAM OF ALL FILTERS TO AUTOMATICALLY STOP THE FAN. IN ADDITION TO SMOKE DETECTOR, PROVIDE FIRESTAT CONTROL WITH FIXED CUTOUT TEMP. OF 125°F IN THE SUPPLY AIR DUCT DOWNSTREAM OF THE AIR HANDLING UNIT.
5. IF MORE THAN ONE SYSTEM IS SERVING A SHARED AREA AND THE TOTAL CFM OF THE COMBINED SYSTEMS SERVING THE SHARED AREA ARE GREATER THAN 2,000 CFM, THEN BOTH UNITS SHALL BE EQUPPIED WITH A SMOKE DETECTOR IN THE RETURN DUCT.
6. PROVIDE U.L. RATED FIRE DAMPERS WHERE REQUIRED AT ALL DUCT PENETRATIONS OF FIRE-RATED ASSEMBLIES AND WHERE REQUIRED BY CODE, INCLUDING OUTSIDE AIR INTAKES.
7. CONDENSATE DRAINS TO BE PVC PIPE RUN TO PLUMBERS P-TRAP WITHIN FIVE FEET OF AIR HANDLING UNITS.
8. ALL AIR HANDLING SYSTEMS TO BE BALANCED TO ASSURE PROPER AIR FLOWS PER PLANS.
9. ALL THERMOSTATS TO BE AUTOMATIC CHANGEOVER WITH HEAT SWITCH.
10. ALL EXHAUST FANS INSIDE OFFICES OR RESTROOM(S) SHALL HAVE A BACK DRAFT DAMPER.
11. PROVIDE AND INSTALL WATER PROOF GRILLE VENT IN PROPER ROOF LOCATION FOR PLUMBING FIXTURE EXHAUST.
12. ALL SUPPLY AIR VENTS SHALL BE EQUIPPED WITH AIR CONTROL DAMPERS.
13. REFRIGERANT LINES SHALL BE SIZED BY UNIT MANUFACTURER AND INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
14. FRESH AIR SHALL BE SUPPLIED TO EACH AIR HANDLER THROUGH EXTERIOR WALL DUCT SUPPLIED WITH A CONTROL DAMPER. LOCATE FRESH AIR VENTS NO LESS THAN 15 FEET FROM EXHAUST AND SEWER VENTS.
15. ALL ELECTRICAL, MECHANICAL, AND PLUMBING PENETRATING FIRE WALLS SHALL BE FIRE CAULKED. (PENETRATIONS THROUGH RATED CONSTRUCTION SHALL BE SEALED WITH A MATERIAL CAPABLE OF PREVENTING THE PASSAGE OF FLAMESAND HOT GASES WHEN TESTED IN ACCORDANCE WITH ASTM-E8-14).
16. ALL MECHANICAL SYMBOLS ARE DRAWN DIAGRAMATICALLY, CONTRACTOR TO VERIFY WITH OWNER LOCATIONS OF VENTS, DAMPERS, REGISTERS, ETC.
17. REFER TO STRUCTURAL DRAWINGS TO COORDINATE LOCATION(S) & MOUNTING OF MECHANICAL EQUIPMENT.
18. FLEXIBLE DUCTWORK LENGTH NOT TO EXCEED 12'-0".
19. REFER TO REFLECTED CEILING PLAN FOR FINAL GRILLE AND DIFFUSER LOCATIONS AND COORDINATE AS REQUIRED.
20. FINAL LOCATION OF TEMPERATURE CONTROLS TO BE COORDINATED WITH OWNER AT JOB SITE.
21. PROVIDE AND INSTALL SMOKE DETECTORS AS APPROVED BY LOCAL AHJ'S.
22. FRESH AIR INTAKES ARE REQUIRED TO HAVE MOTORIZED OR GRAVITY DAMPERS TO SHUT OFF WHEN SYSTEM IS NOT RUNNING. ALL THERMOSTATS MUST BE PROGRAMABLE. SEE SECTIONS 502.4.4 OR 503.2.4.3 OF THE 2009 INTERNATIONAL ENERGY CODE.



MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

FUMEHOOD NOTES:

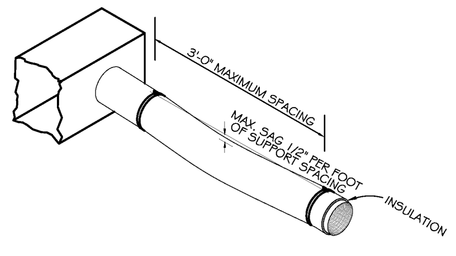
1. FUMEHOOD IN LAB SHALL BE A LABCONCO MDL #3030000; IT SHALL BE VENTED DIRECTLY OUTSIDE USING 8" THERMOPLASTIC ROUND DUCT. THE USE OF A ZERO PRESSURE WEATHER CAP SHALL BE USED.

V V T SCHEDULE

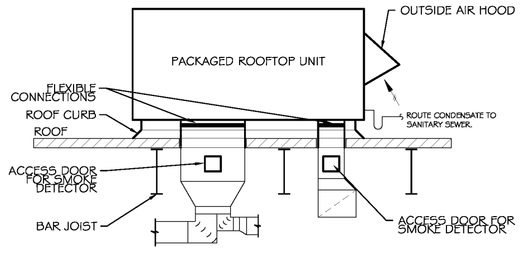
MARK	AREA SERVED	VOLTAGE	HEATER RATING	AIR FLOW
V V T #1	P-5	208 1Ø	3 KW	500 CFM
V V T #2	P-20 & P-21	208 1Ø	5 KW	1400 CFM
V V T #3	P-22	208 1Ø	2 KW	400 CFM

V V T NOTES:

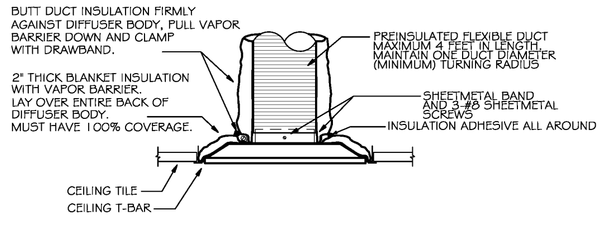
CONTRACTOR SHALL PROVIDE AN OPEN COIL ELECTRIC DUCT HEATERS OF THE SIZE, CAPACITY AND PERFORMANCE SHOWN ON THE JOB SCHEDULE. ALL DUCT HEATERS SHALL BE TESTED AND CERTIFIED TO UL STD 1996 UL FILE NUMBER E245517. HEATING ELEMENTS SHALL BE OPEN COIL TYPE, 80% NICKEL 20% CHROMIUM, TYPE A RESISTANCE WIRE. OTHER ALLOYS ARE NOT ACCEPTABLE. COILS SHALL BE SUPPORTED BY STEATITE CERAMIC BUSHINGS SECURELY FASTENED TO THE ELEMENT SUPPORT BRACKETS. THE DUCT HEATER FRAME, CONTROL ENCLOSURE AND ELEMENT SUPPORT BRACKETS SHALL BE OF 20 GAUGE (MINIMUM) GALVANIZED STEEL. THE CONTROLS ENCLOSURE SHALL BE NEMA-1 CONSTRUCTION WITH STANDARD DOOR INTERLOCKING DISCONNECT SWITCH. THE ELECTRIC HEATER FRAME WILL HAVE FLANGED OR SLIP-IN DUCT CONNECTION. ALL HEATERS SHALL BE FURNISHED WITH A DISC TYPE, PRIMARY AUTOMATIC RESET THERMAL CUT-OFF. A SECONDARY MANUAL RESET THERMAL CUT-OFF WILL ALSO BE PROVIDED. ALL HEATERS WILL HAVE AN INTEGRAL AIR FLOW SWITCH OR A FAN INTERLOCK RELAY (FAN TERMINAL UNITS ONLY). THE ELECTRIC SUPPLY WIRING SHALL HAVE INSULATION RATING OF 221°F (105°C). TERMINAL BLOCKS AND GROUND LUGS WILL BE FURNISHED ON ALL HEATERS FOR FIELD WIRING. A LINE VOLTAGE TO 24 VOLT, CLASS II TRANSFORMER SHALL BE PROVIDED AND MOUNTED INSIDE THE CONTROL ENCLOSURE. ALL HEATERS SHALL HAVE A DISCONNECTING MAGNETIC CONTACTOR(S) WITH A 24-VOLT HOLDING COIL AS STANDARD.



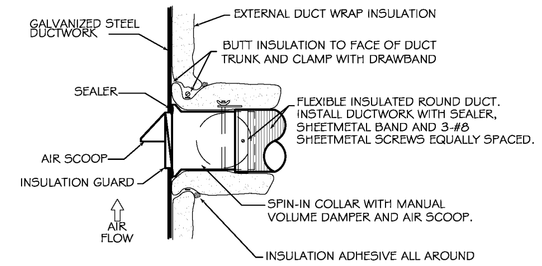
1 M-1 FLEX DUCT SUPPORT DETAIL
NOT TO SCALE



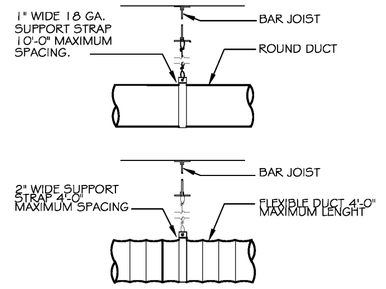
2 M-1 TYPICAL ROOFTOP UNIT DETAIL
NOT TO SCALE



3 M-1 LAY IN DIFFUSER DETAIL
NOT TO SCALE



4 M-1 ROUND DUCT SPIN-IN DETAIL
NOT TO SCALE



5 M-1 DUCT SUPPORT DETAIL
NOT TO SCALE

FAN SCHEDULE

MARK	AREA SERVED	CFM	CONTROLLED BY	BASIS OF DESIGN	REMARKS
EF-1	SHOWERS	70	MOTION SENSOR	BROAN 657 W/ GRILLE	①
EF-2	WOMEN'S RESTROOM	200	MOTION SENSOR	BROAN QT200 W/GRILLE	①
EF-3	MEN'S RESTROOM	250	MOTION SENSOR	BROAN L250 W/GRILLE	①
EF-4	UNISEX RESTROOM	80	MOTION SENSOR	BROAN QT080 W/GRILLE	①
EF-5	COLLECTION ROOM (P-22)	250	SWITCH	BROAN L250 W/GRILLE	①
EF-6	WAREHOUSE	6000	THERMOMETER	ACME FN24J4	②

① PROVIDE FAN UNIT(S), BACKDRAFT DAMPERS AND BIRDSCREENS
② PROVIDE FAN UNIT(S), EXHAUST SHUTTER THAT HAS GRAVITY OPERATED PANEL, BIRD SCREEN, RAIN GUARD. MOUNT AT 16 FT AFF INSIDE WAREHOUSE.

ROOFTOP AIR CONDITIONING UNIT SCHEDULE

MARK	AREA SERVED	TOTAL SUPPLY AIR	MIN OA	ESP IN WG	EVAP FAN MOTOR QTY	EVAP FAN MOTOR HP	FILTERS	COOLING DATA TOTAL (MBH)	COOLING DATA EER	HEATING DATA TYPE	HEATING DATA ELEMENT	HEATING DATA STAGES	UNIT ELECTRICAL DATA V/Ø/HZ	UNIT ELECTRICAL DATA MCA	UNIT ELECTRICAL DATA MOCP	BASIS OF DESIGN	UNIT WEIGHT	REMARKS
RTU-1	FRONT	2675	270	0.5	1	5.0	2" TWAY	87	10.5	ELEC.	18KW	2	208/3/60	60.5	70	YORK DH090E18B2AAA3	1197 LBS.	①②③④⑤⑥⑦⑧⑨
RTU-2	SERVERS	550	50	0.5	1	2.0	2" TWAY	28.0	10.8	ELEC.	1 KW DUCT HEATER	1	208/1/60	14.9	20	YORK NM024C00A1AAA2A	276 LBS.	①②③④⑤⑥⑦ ⑨⑩
RTU-3	LAB	1750	170	0.5	1	.25	2" TWAY	57	10.6	ELEC.	V V T'S	1	208/3/60	28.3	40	YORK DH060C00P2AAA4	1099 LBS.	①②③④⑤⑥⑦⑧⑨
RTU-4	REAR	2075	200	0.5	1	3.0	2" TWAY	75	10.4	ELEC.	18KW	1	208/3/60	57.1	60	YORK DH076E18B2AAA4	1207 LBS.	①②③④⑤⑥⑦⑧⑨

① ALL COOLING CAPACITIES SHOWN ARE BASED ON AN AMBIENT OUTDOOR TEMPERATURE OF 115° F.
② CONTRACTOR SHALL INSTALL ALL NEW FILTERS PRIOR TO TEST AND BALANCE WORK. PRIOR TO TURN OVER, CONTRACTOR SHALL OPERATE ALL UNITS USING FRESH AIR ONLY FOR A PERIOD OF 24 HRS.
③ PROVIDE LOW AMBIENT COOLING CAPABILITY DOWN TO 20°F.
④ PROVIDE ALL COMPRESSORS WITH 5 YEAR WARRANTIES.
⑤ ALL CAPACITIES LISTED ARE MINIMUM REQUIRED QUANTITIES.
⑥ PROVIDE UNIT WITH MOISTUREMISER FACTORY INSTALLED PACKAGE, TSATCCPLH01-B THERMIDISTAT AND RCD-HN-61KK-324 RELAY.
⑦ MANUAL OUTSIDE AIR DAMPER OPTION AND MATCHED ROOF CURBS PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR.
⑧ PROVIDE SMOKE DETECTORS IN EACH RTU WITH FAN SHUT DOWN RELAYS FOR UNIT SHUT DOWN.
⑨ CONTRACTOR TO VERIFY STRUCTURE AND COORDINATE RTU's WITH LANDLORD.
⑩ RTU #2 CAN BE COMBINED WITH RTU #3 WITH OWNER APPROVAL

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MECHANICAL PLAN

REV:

SCALE: AS NOTED

JOB#:

DATE: 1/15/2012

SHEET

M-1

OF