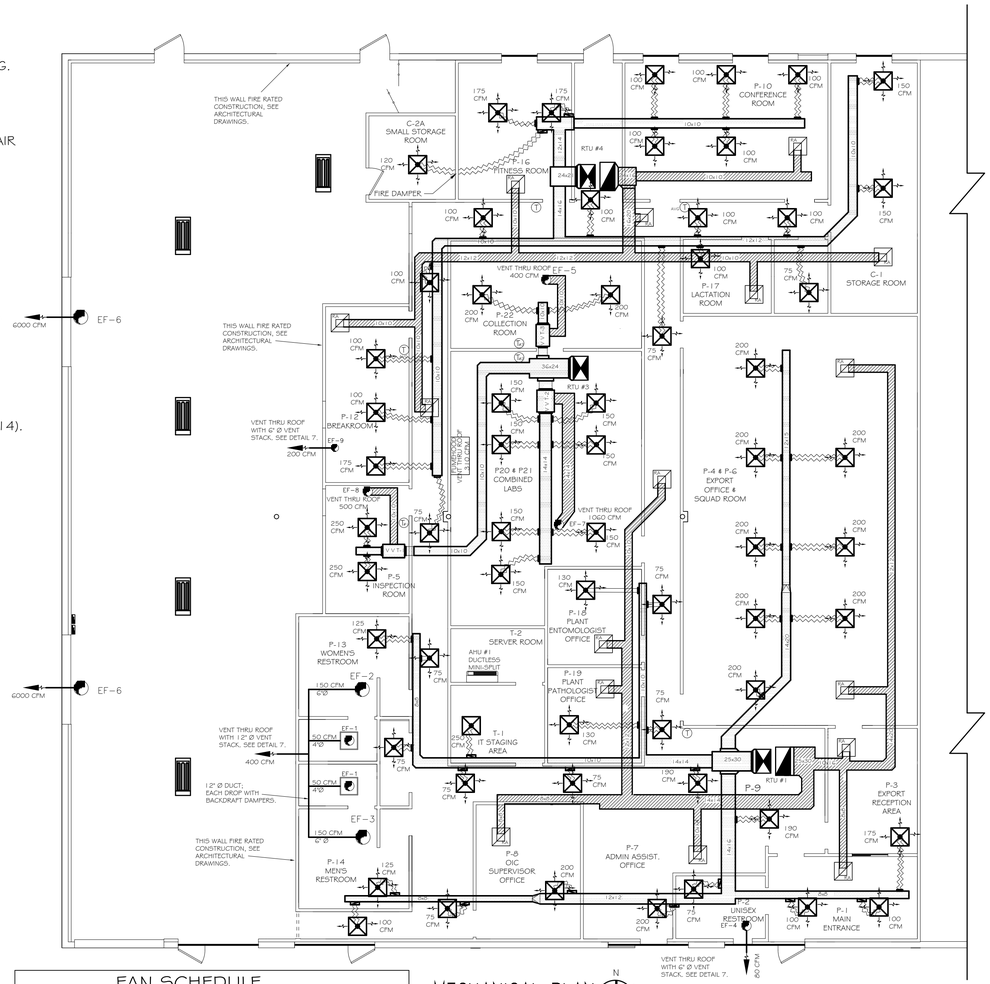
LEGEND

- 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.
- TEMPERATURE AVERAGING THERMOSTAT.
- 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 8" Ø
  200<=300 CFM USE 10" Ø
  < 300 CFM USE 12" Ø
- WAREHOUSE HEATER: 240V - 6.0 KW; TPI CORPORATION CH-624-3A 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. 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 FLAMES AND HOT GASES WHEN TESTED IN ACCORDANCE WITH ASTM-E8-14).
15. ALL MECHANICAL SYMBOLS ARE DRAWN DIAGRAMATICALLY, CONTRACTOR TO VERIFY WITH OWNER LOCATIONS OF VENTS, DAMPERS, REGISTERS, ETC.
16. REFER TO STRUCTURAL DRAWINGS TO COORDINATE LOCATION(S) & MOUNTING OF MECHANICAL EQUIPMENT.
17. FLEXIBLE DUCTWORK LENGTH NOT TO EXCEED 12'-0".
18. REFER TO REFLECTED CEILING PLAN FOR FINAL GRILLE AND DIFFUSER LOCATIONS AND COORDINATE AS REQUIRED.
19. FINAL LOCATION OF TEMPERATURE CONTROLS TO BE COORDINATED WITH OWNER AT JOB SITE.
20. PROVIDE AND INSTALL SMOKE DETECTORS AS APPROVED BY LOCAL AHJ'S.
21. 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:

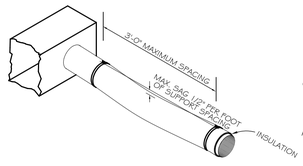
1. FUMEHOOD IN LAB SHALL BE A LABCONCO MDL #3030000; IT SHALL BE VENTED DIRECTLY OUTSIDE USING 8" THERMOPLASTIC ROUND DUCT. THE USE OF A ZERO PRESSURE WEATHER CAP SHALL BE USED.

V V T SCHEDULE

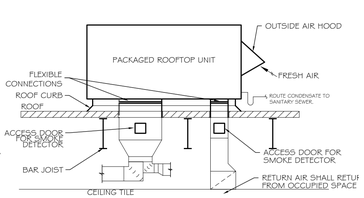
MARK	AREA SERVED	VOLTAGE	HEATER RATING	AIR FLOW
V V T #1	P-5	240V 1Ø	2 KW	500 CFM
V V T #2	P-20 & P-21	240V 1Ø	5 KW	1050 CFM
V V T #3	P-22	240V 1Ø	2 KW	400 CFM
V V T #4	P-10	--	NO HEAT	450 CFM

V V T NOTES:

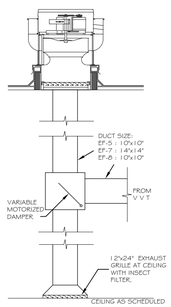
CONTRACTOR SHALL PROVIDE A WATTMASTER UNIT CONTROLLER FOR VVT#1, VVT#2 AND VVT#3. CONTRACTOR SHALL PROVIDE AN OPEN COIL ELECTRIC DUCT HEATER OF THE SIZE, CAPACITY AND PERFORMANCE SHOWN ON THE JOB SCHEDULE. ALL DUCT HEATERS SHALL BE TESTED AND CERTIFIED TO UL STD 1996 UL FILE NUMBER E245517. HEATING ELEMENTS 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 SHALL 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 SHALL 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 SHALL 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.



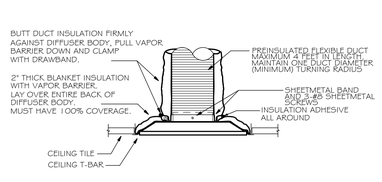
1 M-1 FLEX DUCT SUPPORT DETAIL
NOT TO SCALE



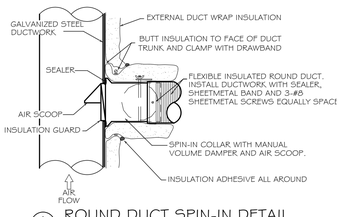
2 M-1 TYPICAL ROOFTOP UNIT DETAIL
NOT TO SCALE



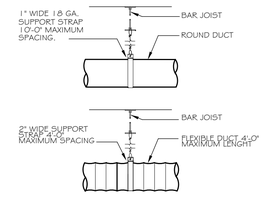
V V T EXHAUST FAN DETAIL
NOT TO SCALE



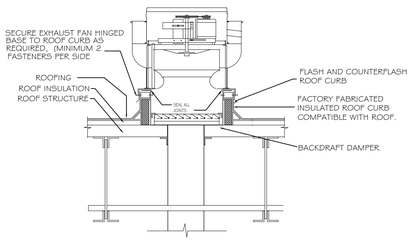
1 M-1 LAY IN DIFFUSER DETAIL
NOT TO SCALE



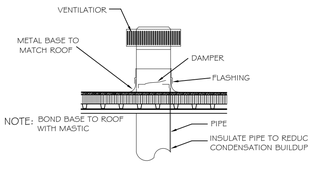
4 M-1 ROUND DUCT SPIN-IN DETAIL
NOT TO SCALE



5 M-1 DUCT SUPPORT DETAIL
NOT TO SCALE



6 M-1 TYPICAL ROOF TOP EXHAUST FAN
NOT TO SCALE



7 M-1 TYPICAL VENT THRU ROOF DETAIL
NOT TO SCALE

FAN SCHEDULE

MARK	AREA SERVED	CFM	RPM	CONTROLLED BY	BASIS OF DESIGN	REMARKS
EF-1	SHOWERS	50	--	MOTION SENSOR	BROAN E678 W/ GRILLE	① ⑤
EF-2	WOMENS RESTROOM	150	--	MOTION SENSOR	BROAN QTXE 150 W/GRILLE	① ⑤
EF-3	MENS RESTROOM	150	--	MOTION SENSOR	BROAN QTXE 150 W/GRILLE	① ⑤
EF-4	UNISEX RESTROOM	80	--	MOTION SENSOR	BROAN QTO80 W/GRILLE	① ⑤
EF-5	COLLECTION ROOM (P-22)	400	1050	V V T	ACME PRN 110	③ ⑤
EF-6	WAREHOUSE	6000	1760	THERMOSTAT	ACME FN24J4	② ⑤
EF-7	P-20 LAB	1060	1050	V V T	ACME PRN 135G	③ ④ ⑤
EF-8	P-5 INSPECTION RM	500	1300	V V T	ACME PRN 110	③ ⑤
EF-9	P-12 BREAK RM	200	--	SWITCH	BROAN QS-2	①

A/C UNIT SCHEDULE

NO.	TOTAL BTU	ELECTRICAL			MANUFACTURER
		VOLTAGE	MCA	CKT BRKR	
1	22,000 1.8 TON	240V, 1Ø	19.0	CMPTR-1,3	LG L5U240H5V2

AHU UNIT SCHEDULE

NO.	TOTAL BTU			HEAT ELEC.	ELECTRICAL			MANUFACTURER
					VOLTAGE	MCA	CKT BRKR	
1	22,000 1.8 TON			2.3 KW	240V, 1Ø	19.0	CMPTR-1,3	LG L5N240H5V2

① PROVIDE FAN UNIT(S), BACKDRAFT DAMPERS AND BIRDSCREENS.
② PROVIDE FAN UNIT(S), THERMOSTAT, EXHAUST SHUTTER THAT HAS GRAVITY OPERATED PANEL, BIRD SCREEN, RAIN GUARD; EXHAUST SIDEWALL & MOUNT AT 16 FT AFF INSIDE WAREHOUSE.
③ PROVIDE ROOF TOP EXHAUST FAN, ROOF CURB, BACKDRAFT DAMPER, VARIABLE MOTORIZED DAMPER AND 12"x24" EXHAUST GRILLE AT CEILING WITH INSECT FILTER.
④ INTERLOCK EF-7 WITH FUME HOOD SO THAT ONLY ONE IS OPERATING AT A TIME.
⑤ ALL EXHAUST FAN PENETRATIONS SHALL BE A MINIMUM OF 10 FT. FROM ANY FRESH AIR INTAKES.

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	3965	400	0.5	1	3.0	2" MERV 13	99	11.0	ELEC.	24KW	2	240/3/60	85.8	90	JOHNSON CONTROLS T102FCOON2AAA5	1207 LBS.	①②③④⑤⑥⑦⑧⑨
RTU-2	SERVER															RTU#2 REPLACED BY AHU#1		
RTU-3	LAB	1950	1950	0.75	2	1.0	2" MERV 13	182.12	11.3	ELEC.	83.3	4	240/3/60	110	110	AAON RN-015-2-0-EB09-13A	1823 LBS.	①②③④⑤⑥⑦⑧⑨
RTU-4	REAR	2350	280	0.5	1	2.0	2" MERV 13	75	11.5	ELEC.	18KW	2	240/3/60	57.1	60	JOHNSON CONTROLS T072FCO0A2AAA5	1099 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-G1 KK-324 RELAY.
⑦ MOTORIZED OR GRAVITY DAMPER TO SHUT OFF FRESH AIR WHEN SYSTEM IS NOT RUNNING 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 RTUs WITH LANDLORD.
⑩ INSTALL A 1 KW DUCT RE-HEAT HEATER AND STEAM HUMIDIFIER TO SERVER ROOM.

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US DEPARTMENT OF AGRICULTURE

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KENNER
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70062

MECHANICAL PLAN

AS-BUILT 5/17/2013

SCALE: AS NOTED

JOB#:

DATE: 1/15/2012

SHEET

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